The Builder.

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Saxon Baluster Shafts.

THE mid-wall shafts dividing the belfry openings in the class of church towers referred to in the *Builder* of August 6, 1898, are as a rule quite plain; but there do occur examples, as at St. Benet's, Cambridge, in which the introduction of bands give the shaft something of the appearance of a baluster. The true Saxon baluster shafts, however, do not as a rule occur in these belfry openings, but in structures which are to all appearance of an earlier type. The accompanying drawings show some characteristic examples of these curious features of our pre-Conquest buildings, with which are connected some rather puzzling questions of origin.

They are established as early features through their occurrence in the western porch at Monkwearmouth, the date of which is fixed by several converging lines of evidence to the close of the seventh century, while a comparison with Roman remains indicates the same early period for their appearance. In technique and in a certain general character they resemble similar features in Roman work, though on the other hand they are in a most important respect entirely unclassical. The Roman evidence comes mainly from the North, and appears in the form of representations of baluster shafts on a small scale on sculptured stones, such as altars. For example, on a Roman altar found not long ago at Birrens, Dumfriesshire, on the Scottish side of the great wall, we find the detail shown in fig. 1, where in the centre of the front a round-headed niche is flanked by two supports that evidently represent such balusters. A small Roman altar from Lanchester in the Cathedral library at Durham exhibits a niche flanked in the same manner. These upright shafts, represented as used constructively, must be distinguished from similar motives, strung together in a sort of beading, and used to form continuous lines of enrichment, as on the Birrens altar, on each side of the niche in fig. 1. It is probably incorrect to speak of these as "rows of balusters." They are really forms of the astragal ornament, though the elements of the pattern may at times have been influenced in form by baluster shafts. In a Roman stone built into the north wall of the north passage of Wilfrid's crypt, at Hexham, there is an astragal of a simple type (fig. 2), and the Birrens beading would be much the same, only that in the middle, at the thickest part, each bead is either cut in two or marked with a nick, it is not easy to say which. Now these same forms of supporting baluster and of beading occur in undoubtedly Saxon stones, many characteristic examples of which are in the Durham Library collection. Fig. 3 is one of several fragments found on the site of the nave of Wilfrid's church at Hexham, and there is every reason to believe that these formed part of its enrichment. Here distinct balusters occur as ornamental motives, while there are other stones in the same collection with Saxon carving on them, which show forms of the beading above noticed. On a well-known stone in the porch of Jarrow Church (fig. 4) there is a row of little balusters, about 3½ in. high, set upright, but curiously similar in shape, if we look at them in one way, to the elements of the horizontal beading on the Birrens altar.

The Roman carver would probably not have represented these baluster shafts as used constructively unless such features had been employed in real life, though nothing exactly like them may have been found on Roman sites. In Saxon work they are not only represented in ornament but actually occur used constructively in buildings. That they are of Roman derivation may be inferred from the comparisons just made between Roman and Saxon stones, and is rendered still more probable by the technical peculiarity that the early Saxon balusters, like the small Roman shafts with moulded caps and bases, are turned in the lathe. We come now, however, to the striking fact that the oldest Saxon shafts occurring at Monkwearmouth, and in the work of coeval date at Jarrow, are in profile quite unlike anything we find in Classical architecture. The existing Roman shafts of small size found in this country (save only some of a special class to be noticed presently) are Classical, inasmuch as they exhibit the three parts of the normal column—base, shaft, and capital. The base and capital may be worked into any number of mouldings, and the neck may be similarly treated, but the main divisions of the whole are not really obscured. The character of these Roman shafts is well illustrated by the example shown in fig. 5; one germane to the present subject, as it actually occurs in the belfry opening of a Saxon church tower at Wickham, Berks. The church lies close to the Roman road that strikes off from the Kennet valley at Speen (the ancient Spinæ) in the direction of Cirencester, and this may explain the appearance in the building of two unmistakably Roman shafts, of which one is given in the illustration. Here we have the normal elements—base, shaft, necking, and capital—of conventional late Classical form.

In the same way the decorative balusters already noticed, whether Roman or Saxon, have base, shaft, and capital. On the other hand, if we take actual Saxon balusters in real life, as illustrated in the accompanying drawings, this classical membering of the shaft is not common, and when it does occur it is in examples that may be placed comparatively late. The early shafts at Monkwearmouth and Jarrow are conspicuous for the complete absence from them of any sign of this Classical norm. They are decorated with a good deal of elaboration by means of numerous shallow projections and hollows that are distributed symmetrically above and below the centre, and take no account of head and shaft and base. The most important examples, those actually *in situ* in the jambs of the porch at Monkwearmouth, were illustrated in the *Builder* of October 12, 1895, on p. 251; but there exist there, or at Jarrow and Durham Cathedral Library, whole or in fragments, nearly fifty similar shafts of the same character, but varying in the distribution of the projections and hollows. The score or more of them in Jarrow porch seem to belong to two types, called here A and B. The examples of each vary slightly, and the two sketches in fig. 6 represent the two forms with sufficient correctness for the purpose. It will be noted that in type A the general outline is straight, while in type B parts of the baluster swell out beyond the general line. This difference occurs also in the Monkwearmouth examples, which are less easy to group and rather smaller in size. In no case, however, in this particular set of shafts do we

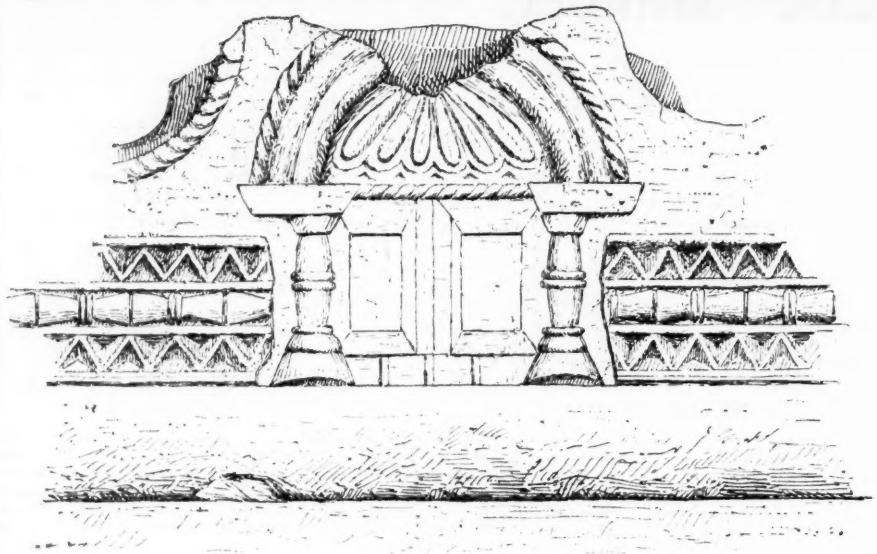


Fig. 1.—Part of Top of Roman Altar from Birrens, Dumfriesshire.

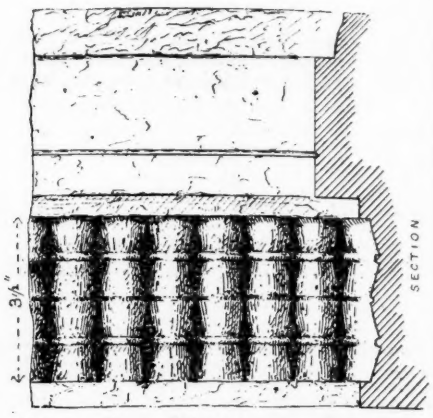


Fig. 4.—Part of String-course in the Porch of St. Paul's Church, Jarrow-on-Tyne (one-quarter full size).

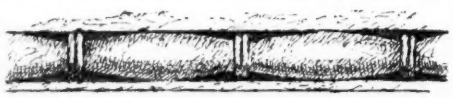


Fig. 2.—From a Roman Stone in the Crypt at Hexham.

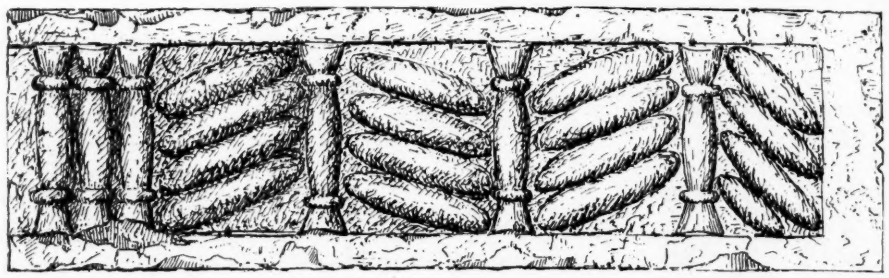


Fig. 3.—Portion of Enriched String-course from Site of Nave of Wilfrid's Church at Hexham: Seventh Century (one-quarter full size).

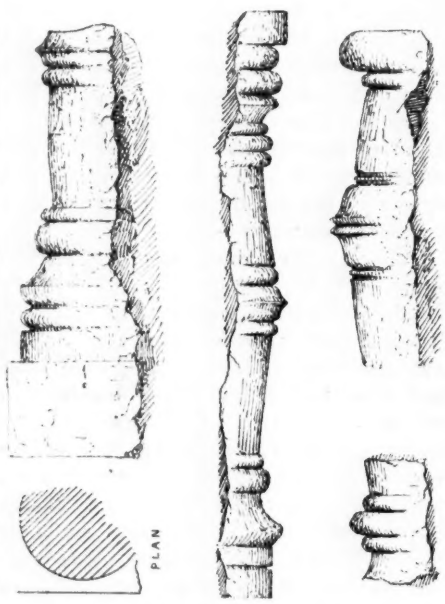


Fig. 7.—Baluster Shafts from St. Mary-in-the-Castle, Dover; in Dover Museum.

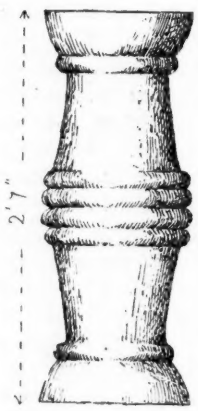


Fig. 8.—In South Side of Ringing Chamber, Barton-on-Humber.

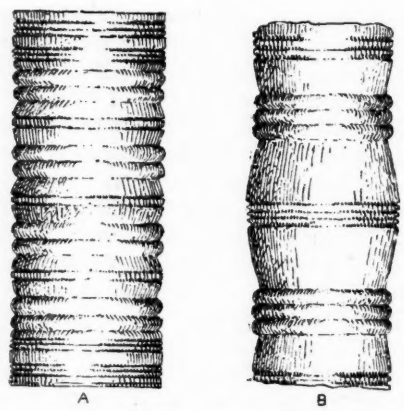


Fig. 6.—Sketches of Typical Baluster Shafts in the Porch of Jarrow Church.

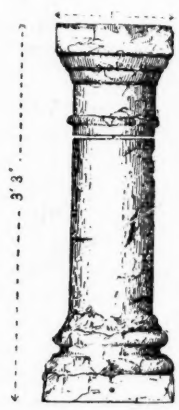
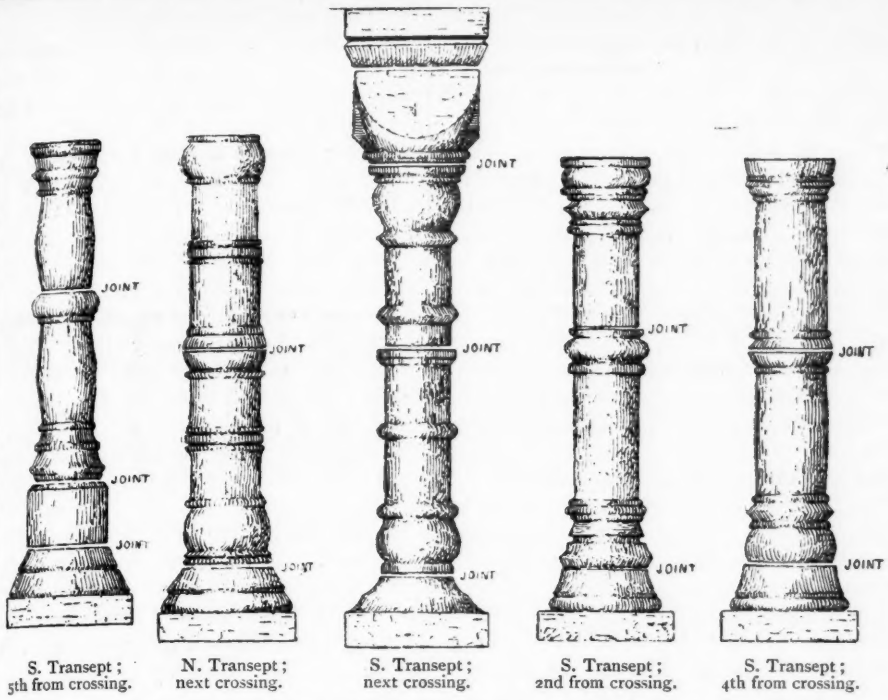


Fig. 5.—Roman Shaft in Belfry, Wickham Church, Berks.

find the marked bellying out of the whole shaft towards the centre part, or the drawing in at the neck and base, of which the other illustrations to this paper give so many examples. It may be noted that though the Roman shaft at Wickham (fig. 5) is straight-sided, there are other Roman examples of the kind with a distinct bellying. One of these is shown in the illustrations to Mr. Fox's paper on "Uriconium," in the "Archæological Journal" for 1897. In all the Monkwearmouth-Jarrow examples the mouldings are very delicately worked in the lathe, and give a high idea of the skill and industry of the craftsman of the time. As regards the use of them, it has been suggested that they formed part of the choir enclosures in the churches where they have been found; but, on the other hand, there are some still in their original position at Monkwearmouth, inserted in the jambs of the window openings in the west wall of the nave (see *Builder* as above), where they came to light in 1866. If this was the way they were used, the number found at the two churches would pretty well correspond to the probable number of the windows. Shafts of this particular kind seem not to have been found anywhere else in our own country, nor are examples known on the continent. We search in vain for their prototypes either in Italy or Northern Gaul, the two sources from which the builders of these churches by Wear and Tyne are supposed to have drawn their inspiration.

Passing away from this specially interesting northern group, we find a set wrought with equal care at the opposite extremity of the country, in the museum at Dover, whither they have been transferred from the Saxon Church of St. Mary-in-the-Castle (fig. 7). They are in a very fragmentary condition, and some pieces have been worked into Early English mouldings. They have been turned in a lathe, and the forms are well emphasised and the cutting sharp and clean. One example is remarkable because the shaft springs from a square plinth cut out of the same piece of stone with itself. These shafts have more of the normal baluster form, with a distinct swelling in the middle part; and this shape is still more distinctly seen in the example from Barton-on-Humber (fig. 8), where the profile is not unlike that of the little decorative baluster shafts in the north. There is a well-known series of turned baluster shafts in the triforium openings of the transepts of St. Albans, figured in Buckler's work on the abbey, that are supposed to be part of the material collected for the rebuilding of the Abbey by Abbot Ealdred at the end of the tenth century. This may be the truth, though it is worthy of note that they are of precisely the same stone, a fine grained oolite, as the Early Norman capitals and plinths and the plain round or octagonal shafts that occur in the same range of openings. The whole of the stone may, of course, have been taken from the ruins of Verulamium, but in this case one would expect to see some trace of a Roman tool on some



S. Transept; 5th from crossing. N. Transept; next crossing. S. Transept; next crossing. S. Transept; 2nd from crossing. S. Transept; 4th from crossing.

Fig. 9.—Baluster Shafts from Triforium of Transepts, St. Albans ($\frac{1}{12}$ full size).

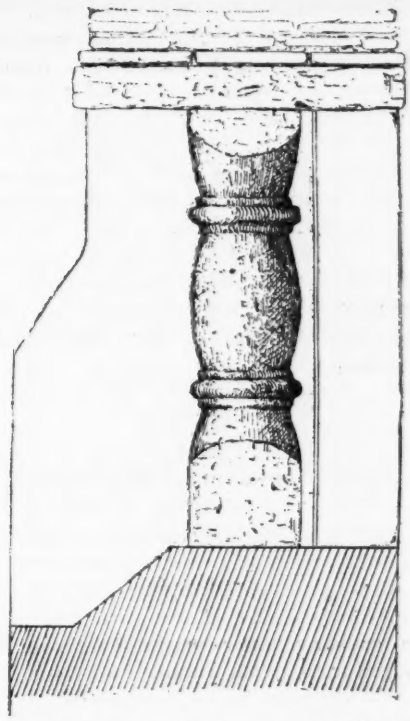


Fig. 10.—Section of Three-light Opening, West Wall, Brixworth Church; showing baluster.

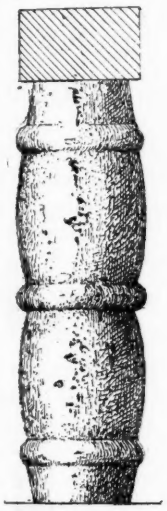


Fig. 11.—Baluster in Belfry, Earl's Barton.

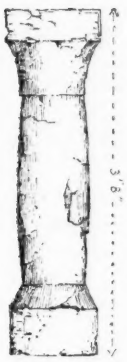


Fig. 12.—From Bardsey Church Tower, Yorkshire.

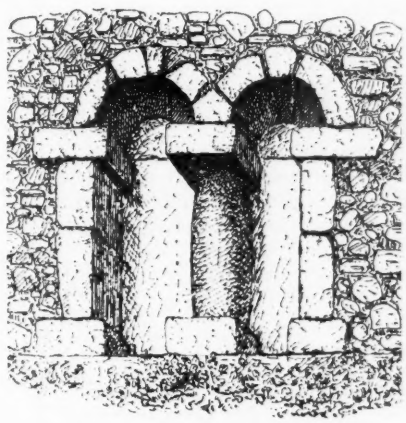


Fig. 13.—Worth Church, Sussex; Window in North Wall of Nave.

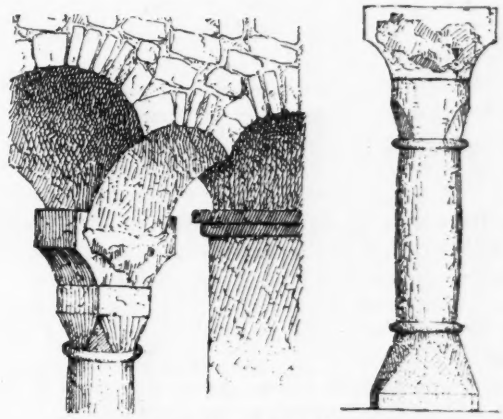


Fig. 15.—Baluster in Two-light Window in East Wall, Wing Church, Bucks.

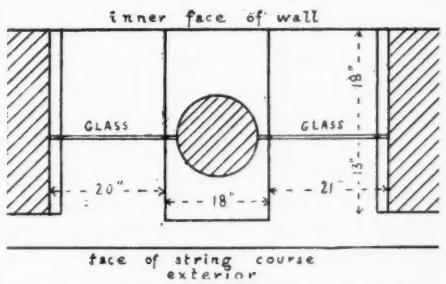


Fig. 14.—Plan of Window, Worth Church.

of the stones, showing that they had been reused. It is not, however, the present purpose to discuss questions of this kind. It is enough to note here that the shafts, which are eight in number, are in no instance all in one piece, but are made up of short lengths averaging about 30 in., which are joined as shown in the examples chosen for illustration (fig. 9). Some of the mouldings, especially at the bases, are made up with plaster, and the whole work presents a somewhat makeshift aspect, quite consistent with the theory that the pieces were survivals from an old store of building material. The caps on them are Norman, of a style like the one specimen shown.

Another class of shafts is represented by the Northamptonshire examples illustrated in figs. 10 and 11. The first is one of the two shafts dividing the triple opening from the upper story of the tower to the nave at the west end of Brixworth Church, and the latter one of many shafts, all of the same character, used in the tower of Earls Barton. These examples differ from those previously noticed in that they are not turned in the lathe, but are roughly hewn to shape by mallet and chisel. They may be regarded as clumsy imitations of the turned balusters, the use of which begins, at any rate, at a much earlier period than that to which these Northamptonshire examples can be ascribed. The Brixworth shafts possess a cap and base of the normal cubical form, cut in the same piece with the shaft.

With the above may be compared the similar but smaller mid-wall shaft (fig. 15) that divides the opening high up in the east wall of the church of Wing, Bucks. This is a building which, on the evidence of its plan, has been attributed to the same age as the main structure at Brixworth. The opening at Brixworth containing the shafts (fig. 10) is shown by distinct marks to be a later insertion in the wall where it is found. Here, at Wing, there are no such indications, and if the window with its shaft is contemporary with the rest of the fabric it becomes a document of capital importance as bearing upon its date.

The last examples selected are shafts of a simple bellying form without mouldings. Fig. 12 has a rude cap and base, and occurs in the very interesting tower of Bardsey Church, near Leeds. The tower, like that at Monkwearmouth, is built on the top of an original western porch of early date, measuring, internally, 10 ft. 2 in. east to west, by 8 ft. north to south, the walls of which are barely 2 ft. thick, though the superimposed tower is nearly 50 ft. high. In this tall and slender tower (it only measures 12 ft. 1 in. in width on its western face) there are on the south side two stories of double openings with midwall shafts and through stones, from one of which the illustration is taken. Finally, figs. 13 and 14 are from the church of Worth, Sussex, where we find mid-wall shafts of rude workmanship dividing the double window openings on both sides of the nave. The church is of late Saxon date, but the shape of the baluster, a plain bellying shaft without mouldings, is curiously like one particular form of Roman shaft referred to above, of which a few examples have been found. The Roman stones in question are unmoulded, and are not unlike the supports of floors in

chambers with hypocaust arrangements. One at Chesters, on the North Tyne, measures 2 ft. 2 in. in height, and swells from a diameter at each end of about 5 in. to a middle thickness of nearly 9 in. In the case of Worth there can be no question of a borrowing of Roman detail, as the church is in the middle of the Andreadsweald and away from Roman sites. The resemblance is merely a coincidence, and does not help us in working out the problem of the relation to Classical models of these interesting features of our pre-Conquest churches.

NOTES.

The London County Council and Workmen's Dwellings.

VARIOUS incidents at recent meetings of the London County Council seem to point to the probability of this body adopting a policy in regard to workmen's dwellings which would be most undesirable, viz, to build them even though they will be let at a loss. Last week the standing order which prohibits the Council from letting workmen's dwellings at rentals which do not return a fair interest on the outlay was suspended. The truth is that there should be an inquiry into the working of the statutes which regulate this matter, and into the way in which has been carried out by different municipalities. If the London County Council erects buildings for the working men who are turned out of existing buildings for necessary improvements, of too expensive and luxurious a character, of course they cannot charge low rents. On the other hand, it may be argued that the necessary cost of building is such that rents which ordinary working people can pay cannot be asked, and that, as the Council is bound to provide workmen's dwellings, it has no option but to let them at a loss. But London is not the only place where workmen's dwellings have to be built when improvements are made in a town, and it is just the kind of subject on which an impartial inquiry would throw valuable light.

The Workmen's Compensation Act.

THIS Act is rapidly receiving many glosses. It is surprising, indeed, how numerous will soon be the decisions upon it. The last one of importance has given an interpretation to the words "on, in, or about a factory," which occur in Section 7. The case arose thus: The defendants were builders and contractors; the plaintiff was a carter in their employment, and at the time he met his death was loading a cart with lumber outside the factory. A part of the load struck and killed him. The County Court Judge decided that the builders were liable, and this decision has been confirmed by the Court of Appeal. It is clear that although the man was not actually working in the factory, he was engaged on business closely connected with it. It was a claim clearly, as the phrase is, within the principles of the Act. The injured person was engaged on business so closely connected with the factory as to make it part and parcel of the factory work. It is obvious, however, that very nice distinctions will constantly arise, because every such case as this must be decided on its special facts. On the whole, we would recommend employers not to contest cases which, as we have said, are obviously intended to be covered by the statute.

The Picturesque of Continental Towns.

PARTS of the City of Florence have been some time ago rebuilt and modernised, but not without reason in a sanitary sense, and hitherto the structures most dear to architects and artists have been spared. There is now, however, an active disposition on the part of the Local Authorities to carry things further, and among other things the Ponte Vecchio is threatened. The removal and rebuilding of this ancient structure would go far to alter the whole ancient character of the city. How far there can be any plea that it is practically necessary it would be impossible to say without a careful inspection of the work on the spot, but every effort ought to be made to save it. A local committee has been formed among those who care for the monuments of ancient Florence, to petition against the threatened proceedings of the City authorities, and signatures to it are being largely obtained in England. A copy of it is at the office of the Institute of Architects, where it can be signed by those wishing to add their names to the protest. We now hear that the picturesque old wooden bridge at Lucerne is also threatened, as is stated, merely on the ground that it is old and (apparently), in the minds of the local people, unsightly; though there may be other and more practical reasons which have not been publicly stated. But the authorities who are so anxious to "improve" ancient cities by destroying their picturesque and historical character would do well to remember that this cuts both ways, and that in thus modernising the cities they are destroying the principal interest which brings foreign visitors and foreign money to them.

Wood Seasoning by Electricity.

A NEW process is announced for seasoning wood by electrical action. The timber to be treated is put into a quadrangular tank of liquid, immersed to rather more than half its depth, and an electric current applied through a metallic conductor, so arranged as to distribute it throughout the area, and it is stated that in a space of four minutes the sap begins to exude at the lower end of the wood; in six hours it is all extracted. The wood is then placed in another tank from which a septic solution is forced into the pores by an electro-capillary method. If this process has successful results at a cost which will not be commercially prohibitory, it may prove of great importance; but we decline expressing any decided opinion on it until after the practical demonstration of it which is promised; we merely here call attention to the subject.

Electrical Transmission of Power.

THE paper which was read recently by Professor George Forbes, F.R.S., at the Society of Arts, on "Long-Distance Transmission of Electric Power," is interesting, coming as it does from a thoroughly practical engineer. The part of it which has been subjected to severe criticism is rather of financial than of scientific interest. The author pointed out that although in every long-distance transmission scheme the cost of the copper used in the mains must always represent a very large fraction of the total initial cost, still, as the metal did not deteriorate to any appreciable extent, the money required for it could always be borrowed at a low rate of interest, the metal itself representing an asset which was practically only affected by fluctuations in the market price of copper. Still, most people would hesitate before they took a four per cent. mortgage on some hundreds of tons of copper exposed in some inaccessible part of Africa or New Zealand. Also, in a 500 mile transmission scheme—for example, from the Victoria Falls on the Zambesi to the gold mines of Rhodesia, the cost of the cartage of this copper, in the unfortunate event of the scheme not being a success, would be a heavy item. Special precautions would also have to be taken against thieves in order to safeguard the bondholders' asset. With the exception of this assumption, the lecturer's remarks were sound, and the methods he elaborated for rapidly estimating the cost in any particular case are well worthy of the attention of engineers. He estimated that the electric lighting of Cairo could be done more cheaply by transmitting power from the First Cataract of the Nile—a distance of 400 miles as the crow flies—than by steam-engines in Cairo itself.

An "Underground Lake."

SOME of the daily papers have discovered a lake in the sandstone at Reigate. From the description, we presume the Upper Greensand formation contains it. Some workmen first of all discovered a series of caves, which consist of several chambers, about 24 ft. by 20 ft., and each chamber has a door communicating with the next. On the floor of the first cave broken into washed sand lay to the depth of 4 in., showing that running water had been at work, and further search proved the existence of a spring of water. Not content with this wonderful discovery the floor of the cave was broken up, and the explorers were rewarded by finding a "real lake of pure soft water." No mention is made as to whether fairy boats or the usual accompaniments of such underground finds were seen. We presume that our learned contemporaries will now give us "underground lakes," day by day—there is plenty of similar material to work upon, and it would be useful from the point of view of water supply. This particular lake is said to be capable of yielding 500,000 gallons of soft water per day. The "caves" alluded to are doubtless old stone mines.

A Novel Electric Engraving Mechanism.

THE "Pananagraph" invented by Herr Wilhelm Sabel, which is now on exhibition in London, is a wonderfully ingenious piece of mechanism, by means of which geometrical plans, &c., can be at once reproduced on any desired scale on stone or copperplate, ready for immediate printing. The instrument itself may be roughly described as an elaborate pantagraph, in which many ingenious mechanical and electrical devices are employed to get rid of friction. The operator simply follows the lines on the plan at one end with a style which is connected to an electric battery, and this, by pressing against a metal ruler, makes the circuit which actuates the graving tool over the stone block at the other end. Special rulers are employed for making dotted lines and curves, a rapid make and break of the circuit being all that is required. Herr Sabel also arranges the apparatus so that a second copy is made at the same time on a smoked-glass plate, and this second copy is useful, as when held up to the light it shows at a glance whether any

line has been accidentally omitted. No special skill is required to work the apparatus, which does its work rapidly, and we satisfied ourselves that the reductions were microscopically accurate. The instrument, of course, takes up considerable space, and considering the mass moved, its freedom from friction is marvellous. This is in part secured by having the rods of the pantagraph attached to steel rollers running on a steel bearing, which is magnetised when the instrument is in action, and so ensures that the pressure is perpendicular to the direction of motion. The syndicate who have taken up Herr Sabel's invention will reproduce architects' and engineers' plans, reduced to any desired scale, on blocks ready for immediate printing, but do not intend to let out their machines. Messrs. Krupp, of Essen, and several German municipalities, have already employed these machines to have their plans reproduced. Herr Sabel is to be congratulated on having overcome difficulties with which he has combated for the last twenty-five years.

Decorative Paintings for Vincennes.

THE jury in the final competition for the decorative painting for the Salle des Fêtes of the new Mairie at Vincennes have awarded the premium to M. Chabas, who is to carry out the work. His painting is a decorative landscape, representing the Lake of St. Mandé with a mass of trees reflected in the water. M. Paul Schmitt, who obtained the second premium, has painted a view of the old Castle of Vincennes; and M. Victor Menu, who obtained the third premium, represents a piece of water in the Bois de Vincennes, also with a mass of forest with autumn tints. Decorative landscape thus seems to be taking a quite important and recognised place in French mural decoration. M. Menu, who designed the borders for the paintings of Puvis de Chavannes at the Paris Hôtel de Ville, is a young decorative artist of great talent, who is considered to have a future before him. M. Chabas, the selected artist, has already executed the decorative painting at the Mairie of the XIVth Arrondissement. The jury on the occasion consisted of MM. Cazin, Harpignies, and Guillemet.

THE LIVERPOOL ROYAL INSTITUTION COMPETITION.

THIS competition has resulted in only six designs being sent in, although two premiums of 50*l.* and 20*l.* were offered. The small number was probably due to the fact that the instructions were exceedingly vague as to the accommodation required. There is consequently considerable difference in the number and character of the rooms in the different plans submitted. The Committee apparently had only made up their minds regarding two wants: a large lecture hall to seat 1,250, and a smaller one capable of accommodating about 500. Alternative plans are shown by some of the competitors, explaining how a portion only —the large lecture hall—could be built first, and about half of the existing building retained.

Messrs. Briggs & Wolstenholme, of Liverpool and Blackburn, to whom the first premium has been awarded, place their lecture hall, a room 84 ft. by 61 ft., on the ground floor, taking up, with the crush-room, &c., the whole of the left hand side of the site. The entrances and exits are very well arranged on either side of a crush-room behind the large hall. Two separate emergency exits are also arranged at the other end on each side of the platform. Over the crush-room is a gallery. This hall is lighted by windows high up on one side, and by dormer windows on both sides of the roof. The floor of the hall is level, the seats not being raised, and although the lecturer's platform is 2 ft. or 3 ft. above the floor, it is a question if it would not be a trying room to speak in. The small lecture-room, 54 ft. square, which is in the opposite corner of the building at the back, would probably be a much better room for sound. The seats are arranged on the amphitheatre plan, and the back tiers are raised. There are two separate entrances to this. The retiring-rooms are well placed between the two lecture halls. On the same floor are committee, tea, smoke-rooms, &c. On the first floor there are two small lecture-rooms, two class-rooms, a library, two picture galleries (each 40 ft. by 28 ft.), and a sculpture gallery (34 ft. by 25 ft.), the last three being top-lighted. On the second floor there is little except a museum (56 ft. by 24 ft.) and a suite of rooms for the caretaker. The elevations are free Classic, and, without possessing striking merit, would probably be fairly effective. A fault may be found with the Colquitt-street front, that it looks too much like two distinct buildings, the end of the lecture hall being so different in character from the rest of the elevation alongside it. It is right, no doubt, to a certain extent, that the internal arrangement should be proclaimed on the outside, and when the whole building is erected something can, perhaps, be done to pull the design better together.

The second premium has been awarded to Mr. R. W. Bedingfield, of Leicester. His large lecture hall is placed at the back. The proportions, 100 ft. by 55 ft., are not good, the room being too long. The tiers of seats are raised at the back. The entrances are quite inadequate and are very badly arranged. There is one narrow entrance for members, and another for the public. The latter is a straight flight of fifteen steep steps leading from a very small entrance hall direct into the lecture hall at the back. The accommodation Mr. Bedingfield provides differs considerably from that shown in the design placed first. He shows five large class-rooms in the basement, and two more on the second floor. There are, besides, an examination hall (only 12 ft. high), two small lecture-rooms, a music-room, a large gallery, a museum and offices, dining-room, smoke-room, &c., in different parts of the building. The whole of the Colquitt-street front on the first floor is given up to a fine range of reception-rooms. His small lecture hall on the ground floor, 55 ft. by 30 ft., is only 13 ft. high from the floor, which is undoubtedly too low, especially as the back tiers of seats are raised. There is nothing particularly striking about the elevations.

Little need be said about the other designs. The author of one set places his large lecture-hall on the first floor, which is surely a mistake. The room is a long and narrow one. There is another design which has a great deal of character, and externally is perhaps the best submitted; but the plan is very faulty, and the entrances and exits to the large lecture hall unsatisfactory. Over the entrance doorway is a dome apparently of stone, and on either side are external staircases which lead to nowhere in particular. All the designs sent in are Classic in feeling except one, which is Gothic of a very poor type. The plan of this last one is, however, good. There can be no doubt that the most suitable design has been awarded the first premium. The assessor was Mr. Henry Hartley, F.R.I.B.A., of 8, Harrington-street, Liverpool.

THE ARCHITECTURAL ASSOCIATION.

THE usual fortnightly meeting of this Association was held on Friday last week in the Meeting-room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, Mr. G. H. Fellows Prynne, President, in the chair.

The minutes of the last meeting having been read and confirmed, the following gentlemen were elected members of the Association, viz., Messrs. L. Blanc and A. Woodroofe.

Mr. E. Howley Sim, senior honorary sec., announced the donation to the library of the following books :—"Alphabets, Old and New," by Mr. Lewis F. Day, and "The Conduct of Building Work and the Duties of a Clerk of Works," by Mr. J. Leaning. A vote of thanks was accorded to Mr. Batsford, the donor.

The Chairman called attention to the first meeting of Professor Hulme's class on "Plane and Solid Geometry," on Thursday, the 8th inst.

ORIEL AND BAY WINDOWS.

Mr. Paul Waterhouse then read the following paper on "Oriel and Bay Windows" :—

There is something unusually humane about the rule of the Association which lays before the readers of papers, not merely the duty of producing an oration, but the subject of the discourse. The ordinary untempered request for a paper brings with it a double horror, for with the honourable burden itself there comes the duty of selection—a duty which, as the paper writer passes in review the possible titles of possible essays, so fills him with the sense of his own ignorance that the process of choice becomes merely a process of rejection, followed eventually by recourse (or shall I say relapse?) into some faltering selection of a theme where for the moment the mist of nescience seems to hang less thickly than over the surrounding regions of architectural learning. The course adopted by the Association is more kindly. The committee gives one a subject—by what process of papers in hats, or balls in ballot-boxes, I do not profess to know. A subject and a man are mated and for better or worse are introduced to one another. There is blessing in the system—it saves a world of trouble, and is the means of introducing a large number of middle-aged practitioners to subjects of which they had previously no knowledge whatever. For the writer who is faced by an unresponsive title goes to his "Parker's Glossary" and his "Architectural Dictionary," drinks eagerly if not deeply at these fountains of knowledge, and comes smiling to his audience, refreshed with the sense of having put himself at least abreast of common knowledge in the subject which he has so lately made his own.

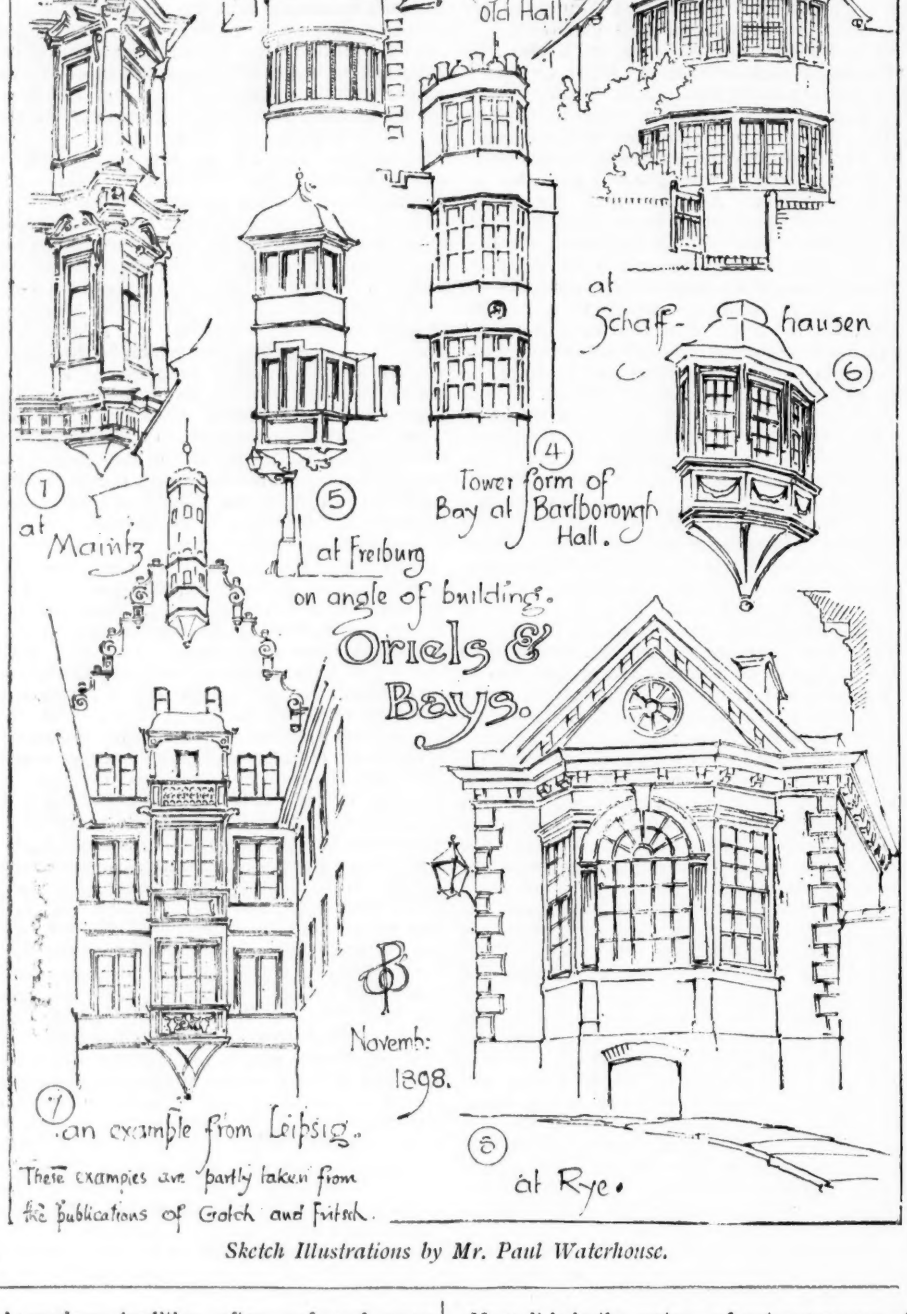
Alas! for the student of oriels and bay windows, the dictionaries give him but cold comfort under either heading. You will find there, to be sure, a wonderful turmoil over definitions and derivations. You will learn there that some consider the word oriel to be originally and properly applied to the projecting windows of mediæval dining halls, or to that part of the refectory occupied by the monks who were slightly indisposed, while others hold that it originally connotes a recess for an altar or for prayer, whether a window or not, and that it certainly cannot properly be applied to the bay window of a banquet hall.

Orare, to pray, is, say some, the foundation of the word, making it, apparently, synonymous with "oratory," while others see in it the Saxon for an "eye-hole," though why they should overlook the fact that oreille (a seventeenth century spelling of the word) means an *ear* and not an *eye*, nor why again the oriel window should be considered more of an eye-hole than any other kind of window, is more than I can say. Another derivation connects it with *Areola*, a diminutive of area which in certain senses is the equivalent of the "halo" of Greek origin—and, indeed, the similarity of the term aureole (plausibly based on *aureola*) favours this source, which is probable enough when one considers that circularity is the essence of the "halo." A high authority takes *aurum*, gold, as the root of the word, but his arguments are more convincing from an etymological than from an architectural point of view.

Plunge, if you desire it, into the controversy on this topic in the IVth Series of Notes and Queries, and you will learn at least enough to induce you to drop the use of the word altogether.

Probably you will conclude with me that the ancients used the term a good deal more loosely than even we are tempted to do; and that an oriel, like a "yorker" and a "gentleman," is one of those things which can be better understood than defined, also that it makes no great matter for example whether you restrict the term to bay windows which are corbelled out, or extend it to those whose form continues down to the ground. In common practice we certainly understand an oriel to mean a bay which does not extend to the ground.

Busybodies have been at work, too, even with the innocent term bay window, which most people can understand by the light of nature as meaning a window whose bulging form, whether polygonal, semi-circular, or segmental, produces on plan a bay-like addition to the room it affects. But some wiseacre has produced a glossary of terminology to qualify the word. We are taught, for instance, of the "square bay" and the "canted bay," of the "compass bay" and the "square and compass bay," of the "bow bay" and the "square and bow bay," and lastly of an elliptic horror entitled the "cabinet window"!



Sketch Illustrations by Mr. Paul Waterhouse.

A modern tradition often enforced upon young gentlemen under articles of pupilage confines the term "bow" to the circular forms, and "bay" to the rectangular or polygonal, while yet another refinement of etymology would banish the word "bow" altogether.

Let it suffice to say on this unprofitable topic that the ancients called them all bays, whether they had or had not angles in their composition, and that there are many examples to which we cannot deny ourselves the luxury of applying the gracious and expressive term bow.

Thinking the matter over, it has seemed to me that we may well avoid in this evening's discussion both the etymological question and the archæological. An historic treatment seems undesirable, and even the constructive aspect, important as it is, may well be laid aside for a season in favour of the attractive subject which I may call, for want of better title, "The Morality of the Bay"—I mean its properties and its proprieties, and the rights and wrongs of its uses and significations.

Has it ever occurred to you, in thinking about bays, that they are bound to be either the glory or the shame of the building to which they are applied?

A bay window is, in the literal sense of the word, an extravagance, by which one means, not merely the escape of money from somebody's pocket, but a deliberate variation on the part of a building from the normal boundary lines of common construction.

Now, it is in the nature of extravagances of all sorts that they must either be successes or failures, and the rule applies to bows and bays. They challenge attention both from within and from without, and if the attention they attract amounts to unfavourable criticism they bring shipwreck on the building they encumber.

Let us think of the objects for which these excrescences exist. They are few, and consist of:—

1. The desire to increase either the size or the amenity of a room.

2. The desire to enable the occupants to look out obliquely or even sideways without putting their heads out of window.

3. The desire to attract oblique sunshine to a room; or finally

4. A desire which is at once the most attractive and sometimes the most fatal of all—pure ambition of a worthy or unworthy kind. Ambition is as happy in its literal application as was the word extravagance. Meaning as it does a certain "going round" it touches in its primary and literal no less than in its secondary senses the essence of the ambient bow.

It may seem absurd to some of you to go thus intimately into the rationalities of an architectural feature; but I suspect that we architects can lose nothing by any attempt to study the true significance of any of the items out of which we compile our compositions. There is one special reason for thought in dealing with such a matter as this—namely, that if we find ourselves dealing in bay windows merely for looks, it is of vast importance to be sure of their excellence and of their propriety. I am not arguing that utilitarian reasons only are the proper grounds for their application, but wish emphatically to mark the necessity of ensuring appropriateness in the bay which is merely a luxury.

We are all familiar with the commonest of all examples of inappropriate bays—I mean the almost invariable excrescence which decks the speculative villa. But let us be sure, in condemning it, that we condemn it on the right grounds. Ambitious as these features appear, there is generally an economic reason for their existence. Sometimes they are one story high, sometimes two, and, in either case, the use of this unlovely addition is generally dictated by one of architecture's fundamental laws—the economy of space—which is the economy of material. The one-story bay tells the passer-by, not merely that the speculative builder wished to give a spurious gentility to his drawing-room at the expense of the garden, but that, desiring to put on the ground floor a room of larger capacity than that of the floor above, he hit upon the bay as the best expedient. Even where the bay is two floors high, thus belying the reason just given, another cause may be at work. Without the bay, there would have been the need of making the wall of the large front room line with the wall containing the front door; in other words, the room would have had to be cramped or the entrance lobby unduly lengthened. In fact, the common villa bay, so far from being an ambitious luxury only, is generally born of the desire to keep down the cubic contents. So much for its shape, its plan, and its capacity; as for its decoration, that is another matter. That it is generally stop-chamfered on every stop-chamferable surface, that it has what they call a patera in the middle of every lintel, and that it boasts of columns of the fern-leaved order of Gothic—all these things are to its shame, but they do not disqualify its original title to existence. Some one should write an article or even a book, on the cost of ugliness. The pathetic squalor of middle-class homes is greatly due, not to the absence of unattainable embellishments, but to the addition of the undesirable. I know a town in a good stone country, inhabited by persons of comparative wealth (for it is the country home of a neighbouring business centre) the architectural appearance of which has been hopelessly ruined by sins not of omission but of commission. I suppose that if, on an average, 10*l.* less had been spent on every one of the houses in that place, it might have been comely, whereas to-day it is loathsome. It bristles with bay windows, of course, and they have nearly all got stone dressings, but there is scarcely a square arris to be found in the town, and not a chamfer but is mutilated with fancy stops. If all these chamfers had been run out to their legitimate terminations, or better still, if half of them had never been at all, if all that square sunk foliage had never been square sunk, if all those paterae (their creators call them "paterasses") had never been cut, the builders might have been richer, the rents might have been lower, and the town itself might have been natural and beautiful, instead of looking like the purgatorial region which lies between the Angel and the Seven Sisters-road.

Alas! for the villa bay, its existence is justified, but its usual development is one of the darkest sins of architectural wantonness.

I have mentioned, as one of the legitimate causes of the bay window the desire to obtain an oblique view from the room. To this cause is due the well-known and often gracious feature which one may call "the seaside bay"; with this we are all familiar, and happily we are able, among the bays of this class, to distinguish a successful as well as a disgraceful variety. The Englishman's cultivation of the seaside dates practically from the last century, and probably the desire on the part of landladies to claim a sea view as an excuse for additional rental is coeval with the birth of watering places. It is to this excusable rivalry in the possession of a glimpse of salt water that we owe, in most marine towns, the amiable bellied fronts of the streets which run at right angles to the coast line. Without the use of bay windows a sea view in such streets would be impossible; with their employment comes the possibility of such a view — a little strained, perhaps, in the further buildings, but still appreciable; just worth having and just

worth paying for. Indeed, so identified in our minds is a street of bay windows with the mental image of a seaside spot, that the very look of certain houses suggests the sea as much as do bathing machines and a smell of tar. There are people who will tell you that they can smell the Channel on the north side of Hyde Park; but it is more a question of eyes than nostrils. It is, in fact, the existence of a row of smiling, sunlit houses planted along *one* side of a broad street only, and, above all, the prevalence of bay windows, and especially of bay windows in certain transverse streets that cultivates the illusion—one falls irresistibly into the trap. You remember how in Liberty Hall the old man says there are more "burials" than "blooms" in Bloomsbury. One might transfer the pun to Bayswater where there are more bays than water, but the former do so connote the latter that they set one at least thinking of sand and waves, though all the time the houses are bowing and bellying and jostling round one another's shoulders for a peep, not at the blue ocean, but at the green trees and grass. Oh, those sea-side bows—the real ones (not the Hyde Park ones)—how well we know them! The modern varieties are tall and pert, not circular, but octagonal, and bastard octagons at that, with one gaunt oak-grained sash in the centre light and two thin and equally tall ones in the side lights. And then the brickwork all covered with pale stucco, and the weak lead roof that lets the wet through! The old ones, how different and how insidiously attractive! As I write I think of one which, on plan, is about a third of a circle; it is divided into three sashes of equal size, all made circular of course, and between them comes no brickwork, but just the sash boxing, so that, in fact, the entire construction is of wood; on the floor above the running of the front room over the entrance passage made the bay unnecessary *for space*, but unwilling to give up the lines of the bay, whose delicate curve means so much to the expression of the house, the designer continued the treatment, and added to its emphasis by a light metal roof of similar form, covering a curved balcony, with a balustrade of ironwork. A great deal of the charm lies simply in the shallow curve and in the appreciation, however latent, of the slight extravagance of the circular joinery. The cheap building of last century or of the early nineteenth century seems never to have denied itself circular joinery; but to-day—probably owing to the prevalence of machine-made mouldings—circular work is apparently the first thing one has to give up in the attempt to save money. In the circular sashes one's satisfaction rests not merely in the delicate form of the sweeping segment, but also mentally—and perhaps unconsciously, in a sense of the added labour, in which there is a gleam of Ruskin's lamp of sacrifice. Not that the later nineteenth century knows no extravagances. The householder who shrinks from laying out money on the refinement of a long-radius curve would scorn to be without his stained-glass "kingfisher" in the panels of the front door, and will probably run to tile risers for the steps. Can it, oh, can it be a fact that every age of building finds at last some corresponding period of admiration, and will it ever be the the lot of some degraded generation to cherish a cult of to-day's abominations? Will there some day be talk among the as yet unborn of the good old days of our great-grandfathers and their cathedral-tinted door panels, their delicately tiled halls, their winsome stop-chamfers, and their charming bay windows, the angle piers of which were formed sometimes of quaint wire-cut bricks, covered with grey cement rendering, and sometimes with dainty cast-iron columns with neck mouldings four times the true Palladian size, and branching capitals cast in the similitude of the common polypody.

Such a day I hope can never come; or rather, when the time does come for our great-grandchildren to pass judgment on what is left of the bricks and mortar of to-day, they will have before them such a vision as we cannot have in any of our retrospects. There is in the work of to-day a *visible* contrast between the good and the bad such as is not to be found by any searcher of our time in the recesses of our past. The contrast-line, unhappily, does not lie between architects' buildings and builders' buildings; for, to our shame be it spoken, there are things bred on the drawing-boards of men with brass plates which have to find themselves classed on the wrong side of the line. But that the contrast exists there can be no doubt, nor can there, happily, be a doubt that there are many beautiful things—bay-windows among them—which will do as happy resting-places for the eyes of our antiquarian descendants.

But we are getting away from the bays, which, to do them justice, set one thinking and drive one's thoughts afield. In bays of the circular form—and, indeed, in polygonal ones as well, but perhaps specially in the former—it is important to remember, as a designer, that the plan form, whichever is adopted, is the most important thing about them; that it must be cherished and led up to, and that finally it will accomplish more of its mere self than a person of moderate experience would expect. Perhaps it seems unnecessary to say this, but there is a special reason for emphasising the observation. In the actual process of designing we deal necessarily with orthographic elevations as a means to our end. A similar bay window put on to an elevation is a comparatively dull thing. You, as architects, realise its circularity on your own or other men's drawings, especially on your own, by the toil of drawing in the mullions in oblique elevation. But the drawing does not tell its full tale of effect, and you may be tempted to attach an (apparently lacking) interest to the member by some addition to the simplicity of its lines—some crowning feature, for example, or an addition to the centre of the cornice, if there is one. In this there is danger of error. The circular or segmental plan once adopted, you cannot serve its end better than by the accentuation of the horizontal lines which partake of the circularity. Herein lies the difference, or one of the main differences, between those old bays that we admire (be they stone and Tudor or wood and Georgian) and the modern horrors in which hang the "apartment" labels. The modern bay makes for height in its apertures; it avoids bars, specially horizontal bars, in its glazing; transomes are probably altogether absent, and the piers are made thick and heavy so as to break even the moderate continuity of the sashes, meeting rails and of the heads and sills. With the older types this is different. Copious window bars (or in stone work well defined transomes) perform the double office of breaking-up undue verticality and of emphasising the plan-form of the bay, while the small piers, mullions, or sash boxes only produce as much intermission as the eye (that unconscious arbiter of stability) demands as a guarantee of sound construction and as a preventive of the worst of all faults—the over-bowing lintel. If you do not know what I mean by this last, ride down Oxford-street on a 'bustop and look at the excrescence which is the sole feature of the Frascati restaurant. To design a bay of this description, you take a centre on the frontage line of the building (or a little outside it if you prefer to increase the effect), and turn a wall circle the inner radius of which is only about three times the length of the thickness of the wall. Here you have produced on plan a semicircular bay which you proceed to embellish by the insertion of one mullion. To be sure, the omission of mullions altogether would have made the thing more startling, but the one mullion gives the public enough to reflect about with some sadness. As they pass the building they naturally and generally view it obliquely; the eye glancing across the curve which looked so fair on plan, and at least respectable on elevation, takes a straight line from the edge of the single mullion to the jamb, and above it they see transome and head vaunting their unsupported circularity.

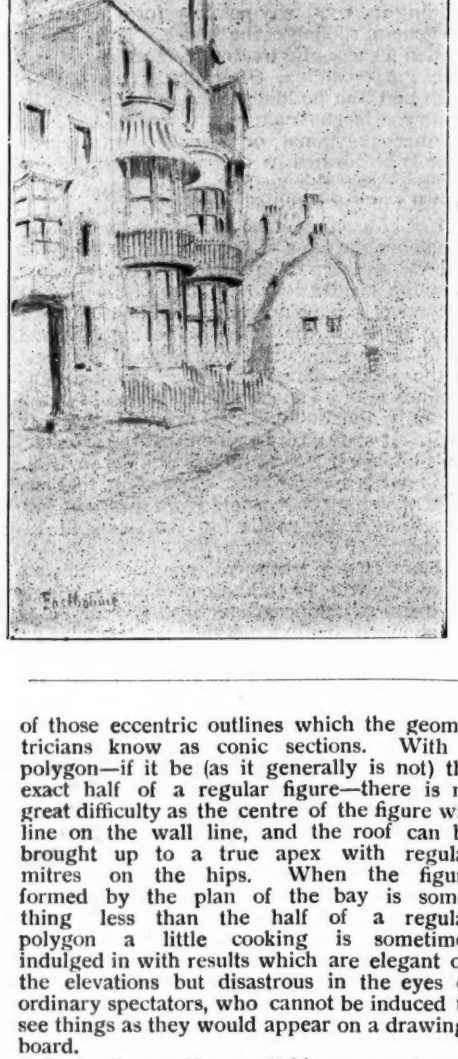
This sad example leads to what one may call an axiom of all good circular work, that the vertical supports must always be sufficiently close together to prevent the appearance of the horizontal members being unsupported. This rule is, in one sense, the counterbalance of what I mentioned before—the need of emphasising the horizontal members; but it is surprising how little, how slender the vertical supports may be and yet satisfy the eye in this matter. In the old inn windows of many a coaching hostel the slimmest glazing bars between the glass panes are enough to prevent the eye being troubled by any optical instability. In the splendid segmental or semicircular bays, which are the glory of some of the country houses of our English Renaissance, the mullions are always so placed that there is no chance of offence in this respect. It should be borne in mind that the relative closeness of these vertical supports is necessitated and regulated, not by the measurement of the length of segment, but by the length of its radius. The flatter the bay, in other words, the less need for the frequent support.

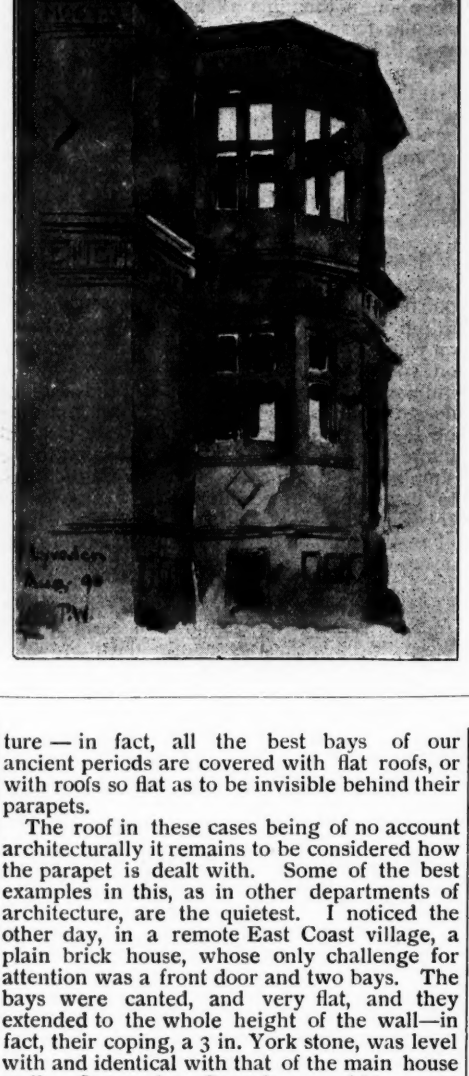
It will readily be understood that the greatest importance attaches to the way in which a bay is covered in. Obviously a bay like other structures can be roofed in either of two ways—either with a flat roof or a sloping one. If your bay extends upwards to the whole height of the building its roof may possibly form a part of the general roofing of the house. This, which is often a successful treatment, needs handling with great caution, especially if the bay be large and the building comparatively small. In a very large structure the roof of the bay, whether polygonal or circular, can appropriately be formed as a member growing out of the rest of the roofing; or it may even, if the plan of the bay be part of a regular polygon, or of a circle, take form as a turret, and rise above the apex of the normal roofing. It is, however, very often the lot of a bay window to be the largest feature, or one of the largest features of a comparatively small house, and in such a case the use of a high-pitched roof of such wide span, with eaves at the level of the general eaves will often result in the production of a feature whose size will swamp not only the building, but with it the bay itself. It may easily happen that the architect finds himself driven to the use of a flat invisible roof for his bay for this very reason, that any form of sloping roof would work itself out into something too gigantic for the scale of his building.

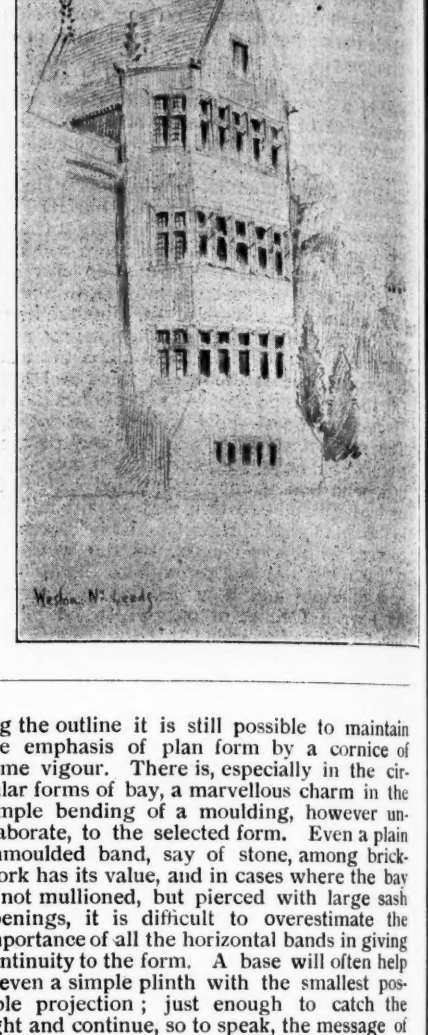
There is one treatment, popular some few years ago, which I think we may unhesitatingly condemn as inappropriate in nearly all cases. It abounds in the neighbourhood of Fitzjohns-avenue, and consists in the cheerful expedient of clapping a gable of the *full* width of the bay on to the unfortunate erection, which is placed in the difficulty of reconciling its own polygonal form with the square structure which surmounts it. The problem is usually resolved by one of two expedients. Either the canted angles of the bay are treated as gigantic chamfers, and brought to the square by the usual latter-day expedient of a vast stop, or corbelling, or the gable, which is at times half timbered, gets its triangular soffits supported by a bracket. These expedients, particularly the bracket business, are unhappy at best, for they cast a shadow on to the splayed windows, besides offering gratuitous harbourage to sparrows and their nests. If a bay must be surmounted by a gable, there are ways of getting over the difficulty. One may make the bay itself square and so produce one of the most beautiful features that can be devised. Indeed, so successful is the appearance of the square bay under a gable that where this form is used one can tolerate a greater width in the gable, and a resultant soffit on either side, though the triangular soffit left by the polygonal bay is so so far from tolerable. All good rules have their exceptions, I suppose, and there are buildings of bygone days which successfully carry through even the problem of the square gable on the canted bay. You may see an example in the "Talbot Inn" at Oundle, of which I have provided a sketch. The homely satisfaction of this building goes to prove that our forefathers could sometimes succeed where their descendants generally fail.

On the whole, one of the most beautiful treatments, though a very unusual treatment, of a gabled bay of polygonal form is that of which one finds an example at Weston, an old house between Leeds and Ilkley. In this case the front or flat wall of the bay runs up to form the gable face, and the splayed sides are surmounted by parapetted wings with finials. The wings having horizontal copings do not, of course, exactly follow the line of the roof. Viewed from the back, if one could so view them, they would present the appearance of triangular blanks, but there is no great harm in this, nor, indeed, would there be any harm in their following the roof line. A gable formed on a canted plan is often very successful, as those will agree who know the gabled apse of St. Michael's Church at Folkestone, where the gable is like this at Weston, so to speak, three sided.

In cases where the bay we are dealing with has walls which are lower than the main walls of the building the roofing difficulty is often nearly as great, at least, where pitched roofing is attempted; and the difficulties in this case are caused by the intersection of the bay roof with the vertical face of the main wall behind. It is obvious that the roof of a segmental bay, if projected at an oblique angle on to the main wall, produces nothing more or less than one







of those eccentric outlines which the geometricians know as conic sections. With a polygon—if it be (as it generally is not) the exact half of a regular figure—there is no great difficulty as the centre of the figure will line on the wall line, and the roof can be brought up to a true apex with regular mitres on the hips. When the figure formed by the plan of the bay is something less than the half of a regular polygon a little cooking is sometimes indulged in with results which are elegant on the elevations but disastrous in the eyes of ordinary spectators, who cannot be induced to see things as they would appear on a drawing-board.

Generally speaking canted bays are not parts of regular octagons, but have their canted sides less than the front. In such a case there may be a small piece of straight return between the cant and the wall. It then becomes necessary to regulate matters so that the hips of the canted sides shall exactly meet on the wall-line, otherwise a roof is produced which nothing but cooking can save and which the said cooking will generally shipwreck.

In this connexion it is well to observe that many of the best old examples, particularly in Tudor and Renaissance work, have no square returns at all and further that the angle of the cant is frequently flatter than 45 deg. There is, to be sure, an objection to the practice of allowing a very flat cant to die into a wall face without the intervention of a square return, namely, that the mouldings of the bay become unduly developed in their incidence upon the wall. This difficulty has to be met either by extreme modesty on the part of the mouldings which have, in fact, to moderate their projection, or by continuing the same mouldings on the wall face as strings or cornices.

On the whole, there is a good deal to be said against pitched roofs for bays of the lower description, unless it be in the case of those with roofs of weathered masonry. In these it need hardly be pointed out, the *planning* must be done in strict regard to the form which will be brought about by the intersection of the roof slope with the back wall.

There is one simple consideration which often altogether upsets the possibility of applying a sloping roof to a bay, namely, the height which such a slope occupies upon the wall space. If your bay projects 3 ft. it is obvious that with a slope of anything over 45 deg., a pitched roof with its flashings will make a window for the room above almost an impossibility unless its sill be at an unusual height from the floor.

The corbelled windows, to which we generally and perhaps incorrectly apply the term "oriel" are frequently covered with high-pitched roofs of masonry, but with this exception the bays of mediæval, Renaissance, and Georgian architecture — in fact, all the best bays of our ancient periods are covered with flat roofs, or with roofs so flat as to be invisible behind their parapets.

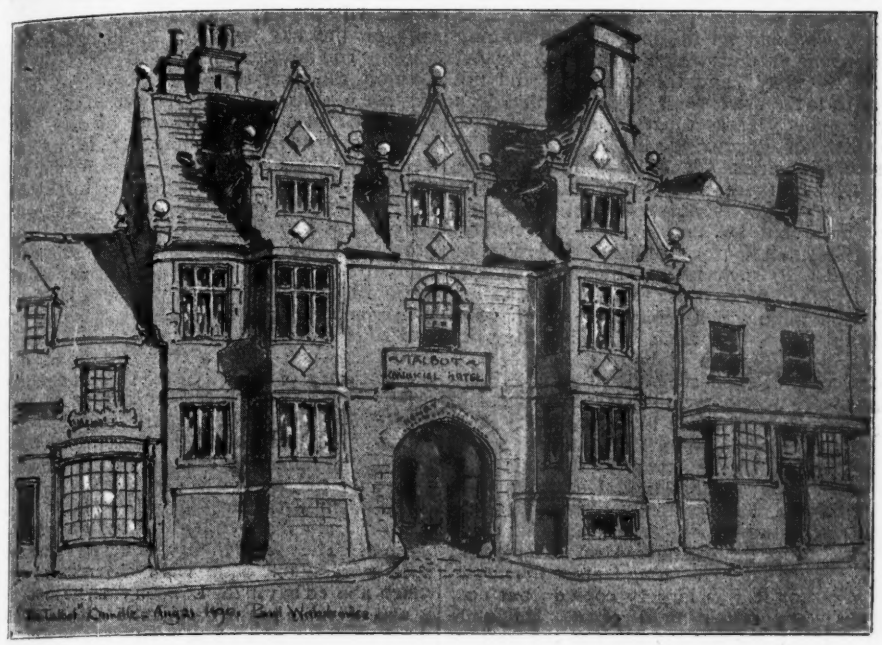
The roof in these cases being of no account architecturally it remains to be considered how the parapet is dealt with. Some of the best examples in this, as in other departments of architecture, are the quietest. I noticed the other day, in a remote East Coast village, a plain brick house, whose only challenge for attention was a front door and two bays. The bays were canted, and very flat, and they extended to the whole height of the wall—in fact, their coping, a 3 in. York stone, was level with and identical with that of the main house wall. Our modern Georgians would have put a ball at each of the angles, and the balls would have looked very well, too. I shouldn't blame them. The composition I am speaking of, simple as it was, did without the balls, and looked as nearly perfect as things of the kind can look.

It was as if a plain brick front, adorned only with its necessary openings, and its equally necessary coping had been taken and bent in two places to form the bays which, with the door, were the only ostentations of the house. The roof, of course, ran straight, and the slight projections of the bays were covered by a lead flat, which was little more than an extension of the gutter of the main roof. In these cases we have the simplest treatment, which, however successful, is no argument for the suppression of all more ambitious conceits. Parapets in all ages have been things to play with, and the bay being the luxury-point on a house's front is not the feature to forego all licence. Our old friend, the battlement, used even by the ancients, as much for ornament as for the defensive objects which his warlike name implies, is a frequent infester of the tops of bay windows. He is not inadmissible, but he should be used with care. Too big he becomes gigantesque and ludicrous; too small he is liliputian and again ludicrous. Even when the proportions are sound he may break up indecently the horizontal continuity which I have spoken of earlier as one of the secrets of success in a bay. Open work of most kinds involves piers and these again, though very valuable in the canted bay as implying strength at the angles may introduce an ill-placed verticality. Our modern trick of the festooned or swooping outline is sometimes happy but is better employed on the straight-sided bays than in the circular, and the same may be said of finials (balls or other forms) unless they occur with such frequency as shall cause an effect of *series* so as rather to carry the eye along the line we are emphasising than to interrupt that emphasis.

Where indulgence is taken in open-work parapets or in finials or other means of breaking the outline it is still possible to maintain the emphasis of plan form by a cornice of some vigour. There is, especially in the circular forms of bay, a marvellous charm in the simple bending of a moulding, however unelaborate, to the selected form. Even a plain unmoulded band, say of stone, among brickwork has its value, and in cases where the bay is not mullioned, but pierced with large sash openings, it is difficult to overestimate the importance of all the horizontal bands in giving continuity to the form. A base will often help —even a simple plinth with the smallest possible projection; just enough to catch the light and continue, so to speak, the message of circularity.

It is time to say something of those bays whose form is not continued downwards to the ground level. The simplest way of treating such a feature is obviously to cut it off flat, and, strange as it may seem, there are many examples of such bays on a small scale and in wooden construction which are singularly successful and happy in effect. The bare idea is contrary to all one's notions of propriety, and the bald simplicity is helped in many cases by a slender wooden corbel or cantilever, which makes no pretence of really doing the work; but the fact remains that in many old villages, such as those which happily still surround London, there are small bays of this description with absolutely plain soffits which are not by any means unpleasing in their appearance.

The corbelled-out bay, to which, as I have mentioned before, some authorities restrict the name "oriel," is a more favourite feature in foreign architecture than in our own. If you look through the pages of those two monumental works on the Renaissance, I mean the "Denkmähler Deutscher Renaissance" and Mr. Gotch's book on our English buildings of the same period—you will be struck by the fact that, whereas bay windows abound in both, the German examples are very largely of the corbelled-out variety, while the English ones are almost invariably of the simple, solid, down-to-the-ground type. Where the Englishman broke loose was in his timber work; his bays in wood-work are sometimes marvels of projection, but in stone the Briton was ever more modest than his foreign rivals. It may be said to the credit of the English that they have never been very over-reaching in the matter of corbels. Visible stability, even in the wildest days of the early Renaissance, has always been as much reverenced in English architecture as it was ignored elsewhere. There are nations whose natural impetus has led them in architecture to the production of portents. It has been their aim to make stone look like a lace pocket-handkerchief, or to run it fine with corbels in real buildings as a child sports with gravitation in his box of bricks. These tricks have not been English tricks, and where they grow



on English soil they are of foreign planting. We may be known by our bays and bows as by other things, and our solidity is something of a virtue. At the same time, one must allow a certain beauty to even the extravagant German frolics. Those bays in particular which grow out of the angles of a building are sometimes of singular grace, and when they are of the square type are often so arranged as to do no violence to the sense of stability.

I had promised not to go into the construction question, but there are one or two points of appearance so closely allied to construction that I cannot conclude without a reference to them. First, as to bays at the angle of buildings. It is a common fault, and a perfectly avoidable one, to so place a bay at the corner of a room that the carrying of the wall angle above it becomes to inquiring spectators a matter of conscious or unconscious anxiety. Of course one knows there is some jugglery of rolled steel joists going on out of sight, but there is no reason why the unconscious faculty which asks building construction questions on its own account should have been worried at all. It is perfectly easy to so plan a bay, circular, or square, or polygonal that the normal wall angle shall be either upon or slightly outside the line of the bay. This gives no detriment to the effect within, and is a great relief to the spectator outside. To have anything so cardinal as the angle of a building apparently descending into the untrustworthy embrace of the lead flat over a drawing-room bay is, to well-ordered minds, a sin.

There is also sometimes a sin in the popular collegiate device of a corbelled bay over an entrance-archway. It *may* be all right in appearance, as well as in construction, particularly if the corbelling is not pressed too hard on to the arch. If well arranged the corbel and its burden seem only to be paying a compliment to the stability of the arch, but if once you get anything approaching to a collision between the arch moulds and the corbel the result is miserably weak—at least in looks. If close quarters are essential some form of keystone treatment is the only possible expedient. One may make a classic or semi-classic keystone the base of a corbel where it would be impossible, on grounds of appearance, to let a corbel take liberties of trespass with a Gothic arch.

It is time for me to draw these rambling remarks to a conclusion, and I feel the lack of any great central doctrine or leading truth with which to pull the subject together. These bays of which we have been speaking grow more in the house than in the palace; indeed, the monumental styles of architecture find less opportunities for their use than the more strictly domestic. The bay has no place in the Palladian method, and though one may find here and there a classic clubhouse whose smoking-room has an excrescent window claiming the name of bay, you will discover it to be disguised outwardly by some tortured colonnade whose insulted entablature seems to be only waiting for the time when it may go back to the straight again. Gothic architecture and the freer Renaissance styles gave the opportunity of using bays even in buildings of size and dignity, but the bay as we have ordinarily to deal with it, is the appendage of a house—of a home.

Its importance as part of a design can hardly be exaggerated. It is, if one may use a homely simile, like the nose on a face. Add 10 per cent. to its size, or take a degree from its flexure and you may ruin the countenance—I should say the elevation—to which it belongs.

A young architect not infrequently opens practice by "throwing out a bow" for a relation. The simple manœuvre is thought to be a safe task to entrust to an unrisen genius. Confiding friends! They little know the risks they run. To be sure, the money-hazard is less than that of the cost of a house, but they little understand the test to which they put their aspiring architect. You know Tennyson's poem of the flower in the crannied wall—

"If I could understand," he says,
"What you are, root and all, and all in all,
I should know what man and God is."

The knowledge of the little is a test, a proof, of the knowledge of the great—of all.

So with your bit of a bay window. It isn't any fool's job. There is a task for eye and hand, a task for the senses of proportion and propriety, a task, in fact, for all the powers that go to make an architect even in the least of these trifles. Bays and oriels are not to be despised. If a man can design them, it is, perhaps, a sign that he can design most things.

"Throw out your bays" by all means, and if you can do them worthily you are probably capable also of throwing up your town halls and your palaces.

Mr. Leonard Stokes, in proposing a vote of thanks to Mr. Waterhouse, said he need not say what an admirable paper it had been; they all knew that; but he felt, if he might say so, a little annoyed that Mr. Waterhouse had justified the use of the jerry builder's bay. Mr. Waterhouse seemed to think that its use was an economical way of getting floor space; he (the speaker) had been trying to work out whether that was so, and he rather doubted it. He would like to take out the quantities and compare the cost of the bay with the cost of the house, for he thought that the size of the house could be increased more cheaply without than with the use of a bay. The jerry builder's bay produced a great effect, no doubt; he had passed along a street that day in which there were fifty-five of them all exactly alike, and all in a row. But the bays to such houses were really useless, and the inhabitants of the houses in which they occurred generally recognised that, for they kept the venetian blinds down and smothered the whole concern with elaborate art curtains. There was one form of bay which Mr. Waterhouse had not execrated as much as he might have done, viz., the form which was really more a *gulf* than a bay. It was generally seen bulging out at the corner of a villa, and both internally and externally it was a most objectionable feature. He should strongly advise any one not to attempt an angle bay of any kind, but of course a bay might be placed near an angle. The architects of past days did, more or less successfully, use angle bays, but the problem was a most difficult one, and seldom quite satisfactory. Mr. Waterhouse had said that it was not absolutely necessary always to use the 45 deg set-square when designing a bay on plan. He should like to go a step beyond that and say, *never* use the 45 deg. set-square when designing a bay on plan. As a rule, the 45 deg. angle was an unfortunate one, though there were some illustrations before him that showed that that angle could be employed successfully. He agreed with what Mr. Waterhouse had said, viz., that if they could satisfactorily design a bay, they could design anything, because a bay was a most difficult feature; and if they could not design a bay, they had better give up architecture altogether, the speaker thought. He was glad to hear what Mr. Waterhouse had said as to the sins of commission which should be omitted. As he had said it was far better to omit embellishment almost altogether. Simplicity and proportion were the foundations of all design. If the bay were designed in good proportion, without a lot of ornament, it would be satisfactory; and if not in good proportion they had better give the matter up, for no amount of ornament would make an ugly-shaped bay look well. In a good many English towns there were to be seen a large number of badly-designed, over-ornamented bays, all helping to make the streets ugly and to turn even architect's houses into *villas*. What he pleaded for was simplicity.

Mr. F. T. Baggallay, in seconding the vote of thanks, said the paper was a most useful and suggestive one, and the lecturer's ideas were conveyed in a most felicitous and humorous way. All architectural ideas—and, to some extent, all artistic ideas—were apt to get into a sort of amorphous state, and it was occasionally necessary to hear such a paper in order to get a few crystals of definite opinion out of views which were sometimes rather confused. The subject of names was a rather unprofitable one, perhaps, but he thought that it was a good service to any vocabulary to give definite meanings to words, and whatever the derivations of such words as "oriel" and "bay" might be, he would suggest that it would be useful if architects could agree among themselves to limit the meaning of oriel to a bay that did not go right down to the ground. As to definite rules for this, that, and the other there were some words in one of the Bab Ballads to the effect that "it is not so much the wooer who woos, as the wooer's way of wooing," and those words, he thought, might be applied to architects in the following way:—"It is not so much what an architect does as the architect's way of doing it." He had come to the meeting rather prepared to advocate that if bays were used at all, there should be plenty of them; that the less bay there was the more likely it was to be unpleasant, and the more bay, the more likely it was to be successful. He had been thinking of some series of lofty bays which had a very dignified effect, and he had contrasted them with the bays of the speculative builder, which were, as a rule, one story high, and very ugly. Though his views had been a little modified since hearing the lecture, he thought that, as a rule, it was safest to carry a bay up, if not the whole height, at least two or three floors, and if possible to repeat it. The treatment of a single bay was very much more difficult. With regard to the roof of a bay rising above the normal level of the roof of a building, he did not know if he had understood Mr. Waterhouse correctly in saying that sometimes that might be done successfully. In his (the speaker's) opinion, it was a most dangerous thing to attempt. With a roof of a comparatively small feature, like a bay, rising above the normal level of the roof, it would attract to itself the whole attention and would dwarf the general composition. He did not know how many examples he had seen during the last six months of that disastrous tendency, which had a most unfortunate effect on a building. Mr. Waterhouse said it was undesirable to have the angle of a building coming down to the roof of a bay. He (the speaker) went farther. His idea was that it did not look safe on the pier in the middle of the bay; they had better take it

beyond that point: it would add greatly to the visible stability of the building.

Mr. H. H. Statham said, in reference to the economy of bay windows, that he did not think they were introduced really so much with a desire to obtain a larger floor space as to make the tenant think that he had got it. If the bay window were taken away, the front wall could be advanced a little, and the floor too, but without the bay the tenant would not think he had such a large room; with the bay he was persuaded that he had a larger and more commodious room. As to the question of nomenclature, he had always understood that "oriel" did mean the variety of bays that did not come down to the ground. As to the question of angular or segmental bays, he was very much in sympathy with Mr. Waterhouse in his evident affection for the segmental bay, and he thought, while Mr. Waterhouse was reading his paper, of a house at Eastbourne, near the east end of the sea-front. It was a much older house than many of the sea-front lodging-houses, with their bay windows, and it belonged rather to old Eastbourne; it had a large, wide, bay widow of a rather small segment of a circle, which gave at once a look of distinction to the house; it was not the ordinary, commonplace, canted bay window. Sometimes a very shallow segmental bay would give that sort of distinction to a house, without taking up room which could not be conveniently afforded. There was a rather good example of that in an office building recently erected in Walbrook; it was in a narrow street, and the architect had treated the front of the office in three very flat segmental bays, just enough to break the line of the wall without any encroachment on the thoroughfare; and he thought that that was a rather happy treatment of a front to a narrow lane. With regard to the canted bay, it was an important question as to the little return joining the main wall, always seen in the common builder's bay. There was often a better effect in carrying the canted side right into the main wall, without any break. As to the angle of 45 deg., he was a good deal in sympathy with Mr. Stokes; but it depended on the architectural character of the house and upon the way in which it was intended to treat the bay. If it was a house of rather severe classical style, and if they wished to give a very symmetrical treatment to every part, they might find the 45 deg. angle the best for the purpose, leaving the two angles equal; but if the house was less pretentious and more picturesque in character, it was better to avoid the angle of 45 deg.

Mr. Alexander Payne said he could give a practical illustration on the blackboard why bay windows were more often introduced into buildings in London now, and why they are likely to be much more largely used in the future, owing to the provisions of the London Building Act, 1894. Suppose, in a street 40 ft. wide, two builders bought the land for building purposes, each taking half. One builder put his houses back, and so forms the line of frontage. As soon as this was done the second builder could not come beyond it, though he might introduce bay windows, which would project from the line of frontage. That was a practical reason why bay windows in London were likely to become more general. The number of houses built at the beginning of this century with bay windows running up several stories was quite extraordinary. In the suburbs, there were whole terraces of them, sometimes with wide window openings in front with arches over, curved on plan, to which iron columns had to be added afterwards, to support them. The importance of the bay window could be realised if one took some illustrations of modern residential houses and just blotted out all the bay windows. What a gap would be made! A bay window was one of the most important features in a modern house, and Mr. Waterhouse had dealt with it in a most humorous and interesting way.

Mr. Thomas Blashill said he had hoped Mr. Waterhouse would have told them exactly what an oriel was and what a bay was, for when a case relating to that feature of a house came before the magistrate, as no doubt it soon would, it would have been convenient to turn to the paper for a reliable definition. The section of the Building Act of 1894 relating to bays was inserted with the amiable idea that some variety would be produced in the streets of London as a result. It was thought that the houses in the streets of London were too flat, and as application was constantly being made to the London County Council for permission to put in a harmless bay window, it was thought best to put a provision in the Act, so that people could get the bay window running up from the ground (which was what the Act meant by "bay") and the oriel. He did not agree as to the uselessness of the jerry builder's bay window; it was a feature employed with the idea of improving the appearance of a row of houses. That was the æsthetic reason; but there was the practical reason, which was not simply to get a larger floor area, but for the sake of convenience which in small houses, could not otherwise be obtained. In such houses the bay window was arranged for in order to accommodate the inevitable table which people loved to have in such a position—the table on which they put the family Bible, or a globe of gold fish, or a microscope. People seemed to think that these things were necessary in the front parlour, and so provision was made in a bay for a table without encroaching much on the floor space. Mr. Waterhouse's remarks as to the angle-bay window rather saddened him. He remembered seeing in one of the professional journals about twenty years ago an angle-bay in a house at Hampstead for the first time. Everyone thought at the time what a charming feature the angle-bay was, and it was largely copied; but now people were rather tired of it. He quite agreed that there was too much of the angle of 45 deg. in bay windows. In a house which he erected once, he adopted the form of half a hexagon, with an angle of 60 deg.; that was a convenient arrangement in regard to the roof and also in the way of execution. As to Mr. Stokes' remarks about simplicity and proportion, he (the speaker) heard a very able and cultured gentleman lecture on architecture about three years ago, and the burden of his remarks was that there was no such thing as proportion in architecture! That was just the opposite view. He (the speaker) was very much in favour of the bay window, notwithstanding what had been said; it was really a very interesting feature if employed properly. In many modern German towns the bay window was being used very largely and in very good proportion, by bringing it out square with columns at the angles; and in Palladian or Classic architecture it was not at all an unsuitable feature. The bay window broke the line of front and enabled the occupants to look up and down the street. He had so often heard blank walls and bald-looking houses criticised that, notwithstanding what had been said by the lecturer, he was of opinion that in long street frontages architects ought to be thankful for the opportunity of using such features as bays and oriels.

Mr. Arthur S. Flower said he had hoped that the lecturer would have told them a little more about the intervals between supports in the case of segmental bays, because blunders were so often made about that. He also wished that more had been said about rectangular corner bays; for his part, he wished they had been prohibited by the Building Act. He would also like to know what the lecturer had to say about the modern practice of running a buttress into the middle of an oriel. He did not think there was much of that done in old work, and he supposed it was easier to build an oriel in that way; but he should like to know something about the morality of it. It was an excellent idea to discuss the rights and wrongs of a particular feature in architecture. As to the provision of a plinth to a bay, it was a question which often came up: whether the plinth, or, to use an older word, the ground table, should run right round a bay or not. He preferred to have it run right round, but there was often an idea that both the projection and proportion of the ground table should be regulated by the thickness of the wall. He wanted to call Mr. Waterhouse's attention to the pronunciation of "soffit." Why was it printed "soffit" and pronounced, as if a French word, "*soffite*"?

Mr. H. A. Satchell said that a redeeming feature of a builder's bay seemed to be the chance it afforded to the occupants of a change of prospect and aspect. It was a great advantage in a house facing, say, due south, to be able to have an outlook east and west. He would rather live in a plain house with a bay than a very handsome one without a bay. He had been, with an eminent member of the Institute, responsible for perpetrating one of those so-called enormities, an angle bay, and in the opinion of the inmates it was the feature of the house, and he ventured to think that any one who saw it would agree with that view.

The Chairman said he agreed to a large extent with the last speaker about the advantage of the bay window in houses facing south. The advantage of a bay, especially in London, was that the occupants might get a glimpse of sunshine, and that was an enormous advantage in this dull climate of ours. Mr. Stokes had advised them never to use an angle window, but he (the speaker) did not agree with that. In an angle bay three sides of the ground could be viewed, and with an octagon bay at an angle a very pleasant prospect could be obtained. He rather regretted that Mr. Waterhouse had not shown some illustrations of foreign oriels, for there were some very pretty ones to be seen in Spain and Nuremburg and elsewhere; while in Scotland there was quite a characteristic and original feature of architecture, viz., the Scottish oriel, which was there treated as it was nowhere else. With regard to what Mr. Waterhouse had called the bastard octagon, he knew of numerous examples in Tudor work where the treatment was very successful. The well-known gatehouse Thornton Abbey, Lincolnshire, and many collegiate windows were so treated. They were highly satisfactory, and the roofs worked out quite well. As regards the much-abused bay in the London villa, he thought it was of value to the occupant, for it gave him more sunlight, and he was able to see a great deal more than if he lived in a house without a bay. It had been badly employed in many ways by the jerry-builder, and the repetitions that Mr. Stokes had referred to were, of course, monotonous but he doubted if such repetitions resulted in more monotonous houses than those in Gower-street, for instance. In reference to Mr. Blashill's "gentleman of great culture," who thought that there was no such thing as proportion in architecture, surely there could be no more dangerous heresy; architecture was proportion; and good proportion in building was essential to good architecture. Although the laws of proportion, except, perhaps, in Classical work, could not be written down by exact rule, yet they were still laws, which appealed to every man who was acknowledged in art and they could not be transgressed without disastrous effect.

The vote of thanks was then heartily agreed to.

Mr. Waterhouse, in reply, said he agreed with Mr. Stokes that the 45 deg. set square was often a snare to architects and led them into many indiscretions. For want of time he had not read the whole of his paper, and one or two points referred to by Mr. Flower and others would be found in the printed report. As to Mr. Flower's question about the buttress system of supporting an oriel, his answer was that he did approve of it; and as to the question of pronunciation, he pronounced the word "soffit," as he found other people pronounced it, thinking that in the matter of pronunciation common use was the best law.

The Chairman announced that the next meeting would be held on December 9, when Mr, Edwin T. Hall will read a paper entitled "The Position of Architecture among the Arts."

The meeting then terminated.

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of this Council was held on Tuesday in the County Hall, Spring Gardens, Mr. T. McKinnon Wood, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Vestry of St. George, Hanover-square, 5,250*l.* for purchase of land and erection of a depot; and the Vestry of St. George-the-Martyr, Southwark, 1,235*l.* for the erection of workshops and stores, and for sewage and paving works.

Chief Officer of Tramways.—The General Purposes Committee reported that they had received seventy applications for the post of chief of the Council's tramway department. They recommended, and it was agreed, that Mr. John Young, manager of the Glasgow Corporation Tramways, should be appointed at a salary of 1,500*l.* a year.

Flash Lights in the Streets.—Upon the reception of the report of the Public Control Committee,

Mr. Alfred Smith asked whether the Committee had had their attention called to the danger of flash light advertisements in the streets: whether it was a fact that they

frightened horses and increased the danger to pedestrians; and whether the Committee could see its way to frame some regulations dealing with the nuisance.

Mr. Crooks, Chairman of the Committee, said that individually the members of the Committee had noticed the flash lights, but the Council had no power to touch them. The Committee would, however, carefully consider the matter, and give it their best attention.

Sir Harry Poland observed that the question was now before a Sub-committee of the Local Government and Taxation Committee.

The Smoke Nuisance.—The Public Control Committee reported the steps they were taking with a view to the enforcement of the provisions as to smoke prevention contained in the Public Health (London) Act, 1891. The Council was aware of the extreme difficulty of dealing with cases where it could only act when default had been proved against the sanitary authority, but so far as the present state of the law allowed they were putting into force the Council's powers to the fullest extent possible. They further stated that, in accordance with the Council's instructions, they were considering in what way it was desirable to amend the law so as to more effectually grapple with the grave nuisance from smoke which still existed to a serious extent in London.

Conveniences, Blackwall Tunnel. — The Bridges Committee recommended, and it was agreed, that the Council should sanction an expenditure of 1,891*l.* 15s. 7d. for the construction of conveniences at the northern entrance to the Blackwall Tunnel, and that the tender of Messrs. Doulton & Co. be accepted for the work.

Abbey Mansions, Westminster.—The Building Act Committee reported as follows, the recommendation being agreed to—

"The Council will remember that in April last a fatal accident took place at Abbey Mansions, south block. It appears that while the building in question was being erected, the Commissioners of Her Majesty's Works entered into a conditional agreement with a Mr. Pawley for leasing the building, one of the conditions being that the occupation of the Government was not to take effect until, in the opinion of the officers of the Commissioners, the premises were fit for occupation. At a later date the District Surveyor discovered that the height of the building was being increased beyond 80 ft. allowed by Section 47 of the London Building Act, 1894; but upon representing this to the builder, he was told that the agreement referred to vested the property in the Government, and that it was consequently exempt, under Section 202, from the operation of the Act. This Section states that any building or structure *vested in and in the occupation of* a Government department for public purposes, shall be exempted from so much of the provisions of the Act as relates to buildings and structures. The same course had been followed in the erection of the adjoining north block, in respect of which a similar agreement had been entered into by the Commissioners of Her Majesty's Works. The District Surveyor having satisfied himself as to the existence of the agreements, ceased to survey the buildings. On April 21 the south block collapsed, causing the death of seven workmen. On July 5 summonses taken out on behalf of the Council in respect of the buildings were heard at Westminster police-court, two of them being dangerous structure summonses, the others being summonses taken out by the District Surveyor (*a*) for improper construction of a story in the roof, such story being more than 60 ft. above the street level and not constructed throughout of fire-resisting material, and (*b*) for excessive height, the building being over 80 ft. high. The magistrate who heard the case took the view that the buildings came within the exemption specified in section 202 of the London Building Act, 1894, as being vested in and in the occupation of a Government department. The summonses were therefore dismissed, the magistrate, however, expressing his willingness to state a case. Letters were subsequently received by the Council from the Office of Works, stating that neither the Crown nor any Government department was in any sense in occupation of the premises, and that, in the opinion of the Commissioners, the buildings were not exempt from the operation of the Act. The Commissioners have, we understand, since repudiated the conditional agreements which they entered into with Mr. Pawley, their surveyor having declined to certify the premises as fit for occupation. In September last proceedings were taken by the Council under the Dangerous Structures Clauses of the London Building Act, 1894, and the Amendment Act, 1898, in respect of the north block of buildings, the angle turret at the corner of Victoria and Orchard-streets being reported to be in a dangerous condition, and the owner having declined to carry out the works specified in the notice served on him by the Council. The Council's position was somewhat complicated owing to the magistrate's decision that the buildings were vested in and in the occupation of a Government department, but, on the suggestion of the magistrate, the question of the works to be carried out for the safety of the public was referred to arbitration. The effect of the arbitrator's award thoroughly justified the action taken by the Council, and the works have now been done. With regard to the magistrate's decision as to the exemption of these buildings from the provisions of the London Building Act, 1894, we think it is a case in which the Council should appeal, as there appears to be considerable doubt whether the words, "vested in and in the occupation of," in Section 202, bear the interpretation placed upon them; and it is desirable, for future guidance, to obtain an authoritative decision as to where the responsibility rests in such cases. The magistrate has accordingly at our request stated a case for the opinion of the High Court upon the question raised. We recommend—That the Solicitor do take the necessary steps for obtaining the decision of the High Court upon the case stated by the magistrate with reference to the question whether Abbey Mansions, Westminster, could be built as exempt from the provisions of the London Building Act, 1894, under Section 202 of that Act, by reason of the conditional agreements made between Mr. Pawley and the Commissioners of Her Majesty's Works."

Tramways.—The Highways Committee recommended, and it was agreed, that the undertaking of the London Tramways Company, after it shall have been transferred to the Council, be designated the "London County Council Tramways."

The Housing Problem.—The Housing of the Working Classes Committee presented a report containing a series of proposals for the general conduct of the Council in regard to housing.

The first recommendation was "That housing accommodation should be provided for a number of persons equal to that of the working classes displaced by any scheme under the Housing of the Working Classes Act, 1890, or under the provisions of any Improvement Act, but not necessarily in the immediate neighbourhood of the displacement, due consideration being given to the needs of those living on any particular area."

Mr. Bruce, Chairman of the Committee, in moving the adoption of the report, pointed out the enormous waste of human life which resulted from the crowding of tens of thousands of people, four, five, six, seven, and even eight into a room. The great difficulty of building by the public authority was the cost. The Council, unlike a private builder, had to consider not only the comfort and convenience of the persons to be housed, but the requirements of the medical officer of health. The medical officer required that there should be thorough ventilation in one and two-roomed tenements, and this greatly reduced the number of rooms which could be placed on an area.

Sir A. Arnold moved an amendment to refer back the proposal. He protested against "tying the Council's hands for ever," as this recommendation would do, and said that when the working man used the underground railway and had the services of 8,000,000*l.* for a penny, he sometimes forgot his indebtedness to capital.

Sir John Hutton thought the Housing Committee might more properly be described as the "Eviction Committee." The prolific and pregnant cause of the costliness of housing the working classes was the fact that less labour was given by the workman for his money than he used to give.

On a division, the amendment to refer back was lost by 92 votes to 16.

Lord Onslow moved, as a further amendment:—"That, before adopting the recommendation, the Council desires to have from the Housing Committee a definition of those who should be included in the term 'working classes.'" He contended that while in London they had found dwellings for all those classes earning high rates of wages, they had not found dwellings for those who were really the necessitous poor. Liverpool and Hornsey had succeeded in doing this, and he asked why the Council should adhere to this very expensive and very luxurious style of dwellings when they were utterly failing to accomplish the object which Parliament had set before them.

Mr. Bruce pointed out that the Act of Parliament said the Council must house as many persons as they displaced, but it did not provide that the same persons were to be housed.

The amendment was negatived by 71 to 31 votes.

Mr. Crooks moved to add to the recommendation the words, "That a register be kept of all persons displaced, and, if possible, such persons should have the first refusal of tenancy."

The addition was agreed to, and the first recommendation, as amended, became the finding of the Council.

The second recommendation, that all clearances involving re-housing should be done at the sole cost of the Council, was also adopted, and the consideration of the third recommendation, with regard to the purchase of land under Part III. of the Housing Act, was postponed.

Holborn to the Strand.—On the recommendation of the Improvements Committee the following was agreed to:—

"That the Parliamentary Committee be instructed to make provision in the Improvements Bill for the next session of Parliament for the acquisition, in connexion with the rehousing of persons to be displaced by the formation of the new street from Holborn to the Strand, of land (1) in St. Pancras, bounded on the east and north-east by Packenham-street, on the west by Arthur-street, and on the south by Wells-street, comprising the premises occupied by the London Improved Cab Company; (2) in Holborn, bounded on the north by Holsworthy-square, on the south and east by Little Gray's Inn-lane, and on the west by Gray's Inn-road, comprising the premises of the Holborn Union workhouse; and (3) in Lambeth, on the north side of Palmer-street, between Cornwall-road and St. Andrew's Church, and on the east side of Cornwall-road, between Palmer-street and the passage known as Peer's-cooperage."

Additions, Mayford Industrial School.—The Industrial and Reformatory School Committee recommended:—

(*a*) That an expenditure not exceeding 500*l.* be sanctioned for the construction of a manual instruction room at Mayford Industrial School.

(*b*) That an expenditure not exceeding 500*l.* be sanctioned for the construction of a swimming bath at Mayford Industrial School.

(*c*) That the Industrial and Reformatory Schools Committee be authorised to issue advertisements inviting tenders for the execution of the work.

The recommendations were agreed to.

Discharges in Sewers.—In concluding their report on an explosion in the filth-hoist over the northern low-level sewer at the Abbey Mills Pumping Station, the Main Drainage Committee recommended:—

(*a*) That the Council do make an order under Section 10 of the Council's General Powers Act, 1894, prohibiting the discharge into sewers of dangerous substances from premises where the process of distilling or re-distilling petroleum is carried on, and that the solicitor and chief officer of the Public Control Department be instructed to prepare such order.

(*b*) That the chief officer of the Public Control Department be instructed to serve a copy of such order upon any person or persons carrying on the process so as to make it probable that refuse is discharged from the stills into the sewers.

The recommendations were agreed to, and the Council shortly afterwards adjourned.

ARCHITECTURAL SOCIETIES.

GLASGOW ARCHITECTURAL ASSOCIATION.—At a meeting of this Association, held in the rooms, 187, Pitt-street, Mr. George S. Hill in the chair, a paper was read by Mr. Hunter Crawford, Edinburgh, entitled "Domestic Steam Heating and Hot Water Supply." Mr. Crawford pointed out and discussed the differences between heating by steam and heating by hot water. The extreme dryness of air caused by steam heating rendered it unhealthy except where a good circulation of air could be obtained, as in a hall or staircase. The rapidity with which the heat in a room could be raised by the steam was certainly one of the advantages possessed by the steam system over the hot-water system. The fact that water could be heated by steam to near boiling point rendered this system of great use for domestic purposes in the kitchen, and in the washing-house, &c. Mr. Crawford illustrated his paper by a model, glass tubes being used in the place of iron piping, so that by means of coloured water the flow in the pipes was clearly indicated. The lecturer, by means of the model, showed the several points which had to be borne in mind when putting in such an installation as was shown by the model, which showed a section of a house with radiators fitted into the different rooms, washing-house, boiler, &c., connected to a steam generator in the basement. Mr. M'Gibbon, in moving a vote of thanks to the lecturer, which was heartily adopted referred to the pleasure the

Association had in receiving him as a delegate from the Edinburgh Architectural Association.

MID-LANARK ASSOCIATION OF ARCHITECTS.—The first annual general meeting of this Association has just been held in Hamilton. The secretary's and treasurer's reports for the year showed that the Association had supplied a want—the wonder being that it had not been formed sooner. The Association had already been of considerable service to the profession in the district. The officials and council for the ensuing year were unanimously re-elected as follows:—President, ex-Provost Arthur, Airdrie; Vice-President, Mr. Cullen, Motherwell; Bailie Davidson, Coatbridge; Mr. Harvey, Bellshill; Mr. Paterson, Hamilton; and Mr. Ross, Wishaw, ordinary members; and Mr. Miller, solicitor, Motherwell, secretary and treasurer.

LEEDS ARCHITECTURAL SOCIETY.—"A Cruise in the Eastern Mediterranean" was the title of an address given on the 28th ult. by Mr. John Tweedale before the members of the Leeds and Yorkshire Architectural Society at the Society's rooms, Park-street, Leeds. The lecture, which was illustrated with lantern slides, dealt with life and scenery in Greece, Palestine, and Egypt. The chair was occupied by Mr. George Corson.

Illustrations.

SCULPTURE PANELS.

THE panels in relief here illustrated have been executed at different times by Miss E. M. Rope; all of them having the quality in common that they are designed as decorative sculpture to fill panels in walls.

The panel for the Rotherhithe Town Hall was designed to fill a space of 20 ft. in length below the front of the gallery in the Council Chamber. It is framed by oak panelling above and below. Unfortunately three large windows face the panel, making the effect of shadow in low relief almost impossible. The panel is therefore toned strongly with raw umber and wax rubbed in, and this not only has the effect of bringing out the relief, but agrees well in tone with the surrounding oak. The sculptor went down to the docks to get sketches of the timber loading, &c., and worked on the plaster from a scaffolding for a week or more after the panel was in position, in order to fight for effect under the unfavourable conditions of lighting. The Vestry arms are coloured heraldically, but not by the artist.

The "Sea Chariot" circular panel was designed for an over-mantel. It was exhibited at the New Gallery in plaster, and at the Paris Salon in bronze, under the title "Au fond de la Mer."

The long panel for an over-mantel, representing children playing and swinging, illustrates the lines—

> "Antic sport and blue-eyed pleasure
> Frisking light in frolic measure";

words which were thus translated in a notice of the Royal Academy in the *Moniteur des Arts*:—

> "Le Sport Antique, et le plaisir d'yeux bleus,
> Eclairent la lumière dans des Saintes mesures."

This is one of the best specimens of French misinterpretation of English we have seen, and is worth preserving.

The other two panels are also for over-mantels; the one representing four children dancing is really a portrait group studied from the children.

These panels for over-mantels were purposely designed to be executed at a low cost and repeated if desired, so that they could be used by others than the very rich. The "Sea-Chase" panel, for instance, has been used in the gymnasium of the High School at Ipswich. The portrait relief of children was a commission; the four children appear twice, in order to give another view of the faces and to lengthen the relief.

PREMISES, BROMLEY.

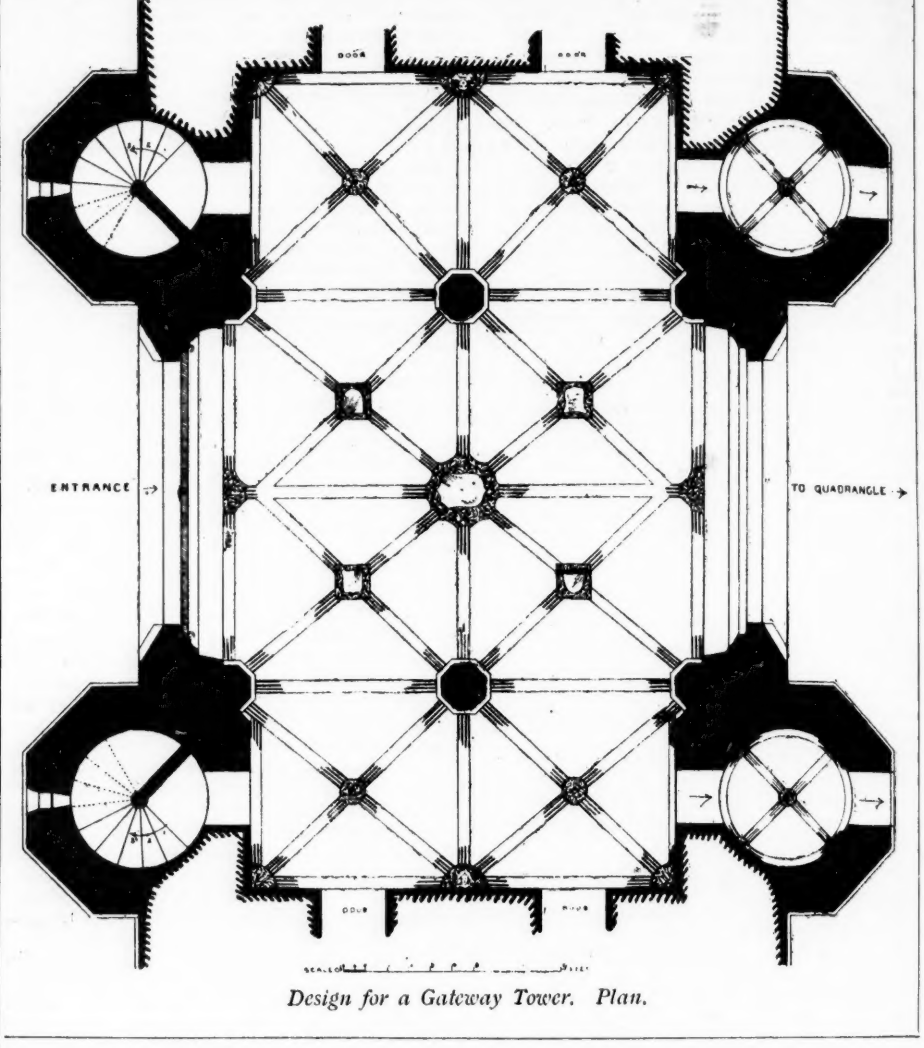
THE shop and bank have been built from my drawings and instructions. The base of the building is of grey unpolished granite; the bank windows are of gun metal, the walls of red brick, with red tile roofs.

The upper part of the bay windows is covered with cast lead with a cast pattern painted and gilded. The gutters are also of cast lead, with patterns. The shop front is of teak, as are also the doors of the bank.

The work generally has been carried out by Mr. F. P. Duthoit, of Bromley. The cast lead-work and gun metal sashes, as also the lead glazing, were done by Messrs. Wenham & Waters; the electric work by Messrs. Price & Corneille, and Messrs. Bishop & Co., of Croydon; the gates by Messrs. Elsley & Co.; the heating apparatus, &c., by Messrs. Longden & Co.; the strong-room work by Messrs. Chubb; and the fittings by Messrs. Sage & Co.

I am only responsible for the sketch of the "Bell Hotel," adjoining, as shown by the drawing you publish; Mr. Saunders (Messrs. Reid & Co.'s architect) kindly allowing me to collaborate with him to this extent. The building of the "Bell" was carried out entirely by him, and as built shows many features which are absent from the original sketch and to which I can lay no claim.

ERNEST NEWTON.



Design for a Gateway Tower. Plan.

INTERIOR OF ST. MARY'S CHURCH, MANSFIELD.

THIS drawing of the interior of a church, of which Mr. Temple Moore is the architect, was exhibited at the Royal Academy this year, and was commented on in our notice of the Academy drawings at the time.

Owing to the architect being out of town, we are unable to give any detailed information about the building, and must leave the drawing to speak for itself.

DESIGN FOR A GATEWAY TOWER.

THIS is a Royal Academy School design. The subject was set by Mr. T. G. Jackson, R.A., and the design here published, by Mr. G. J. J. Lacy, gained the 25*l.* premium in the Upper School of the R.A. Mr. Jackson's instructions were that the gateway was to be groined, and place to be found for a statue above the entrance. The upper part was to contain a living room, well lighted. On each side of the tower was to be a lower building, 24 ft. from ground to wall plate, with two stories of rooms and an attic; all to harmonise in style. The height of the tower not to exceed 70 ft.

PROPOSED CHURCH OF ST. COLUMB LANCASTER ROAD, W.

ST. COLUMB'S, Lancaster-road, has been planned to accommodate a congregation entirely in the nave, with a processional aisle encompassing the whole church; a distinct baptistry being provided on one side. The choir and sanctuary are shown to be unusually large. On either side are low galleries for the organ and orchestra. The vestry and choir school are beneath the sanctuary.

The treatment is simple and broad, of brick, stone, and plaster; the barrel roof having iron principals. Internally the lower part of this is to have modelled plaster decorations, coloured. Externally the treatment is in brick.

The architect is Mr. W. A. Pite. The drawing of the interior was exhibited at the Royal Academy, 1897.

COMPETITIONS.

SCHOOL, BALA, MERIONETH.—In the open competition for designs for the New County Intermediate School at Bala, the plans submitted by Mr. H. Teather, of Shrewsbury, have been placed first by the assessor, and he has been appointed to carry out the work.

SCHOOL, WREXHAM.—At a recent meeting of the managers of the County school, the Clerk (Mr. W. R. Evans) reported that seventeen sets of drawings had been received in the competition for a new school building, and the assessor had made his awards as follows:—First, "Light" (Mr. John Henry Phillips, Cardiff); second, "Kelt" (Mr. H. Teather, Shrewsbury); honourable mention, "Intermediate" (Messrs. Wilson & Moxham, Swansea); "Inigo Jones" (Mr. Frank Bellis, Bagnor). The first design would, in his opinion, cost 10,179*l.*, the second 10,215*l.*, the third 11,668*l.*, and the fourth 13,070*l.*

FEVER HOSPITAL, ARDROSSAN.—We have received a letter from a competitor complaining that the plans in this competition have been lodged about six weeks ago, and nothing has been heard of the decision yet.

PUBLIC OFFICES AND DEPOT, YARDLEY.—In the limited competition for the new public offices

depot, fire-station, and mortuary to be erected in Stratford-road, Sparkhill, Birmingham, the assessor, Mr. W. Martin, has awarded the first premium to Mr. A. Harrison, 88, Colmore-row, Birmingham, the second and third premiums being equally divided between Mr. J. R. Nichols, 59 and 61, Colmore-row, Birmingham, and Messrs. Ingall & Son, 3, Temple-row, Birmingham.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the London Building Act, 1894. Those applications to which consent has been given are granted on certain conditions.*

Dwelling House and Shop at less than the prescribed distance.

(*a*) That the resolution of the Council of February 15, 1898, with regard to the application of Mr. W. Stewart on behalf of Mr. C. Craze be rescinded. (*b*) That consent be not given to the erection of a dwelling-house, with shop, on the north side of Watney-passage, at the rear of No. 52, Watney-street, the ground story portion of the building to abut also upon Winterton-street, at less than the prescribed distance from the centre of the street.—Agreed.

Lines of Frontage.

Hackney, North.†—Stabling to abut upon the east side of Upper Clapton-road and the west side of Cassimer-terrace, Hackney (Mr. R. L. Adamson for the North Metropolitan Tramways Company).—Consent.

Clapham.—That the application of Messrs. Lee & Pain on behalf of Sir J. P. Dickson-Poynder, Bart., M.P., for an extension of the periods within which the erection of houses on the south side of Poynder's-road, Clapham Park, Clapham, on part of the grounds of Bygrove House, was required to be commenced and completed, be granted, upon condition that the houses referred to be commenced within two years and a half and completed within three years and a half from July 26, 1897.—Agreed.

Deptford.—Two one-story shops on part of the forecourt of No. 133, High-street, Deptford (Mr. J. Webster for Mr. A. B. Luck).—Consent.

Dulwich.—Four one-story shops on the western side of Dog-kennel Hill, East Dulwich, adjoining East Dulwich railway station (Messrs. Barlow & Roberts).—Consent.

Holborn.—A porch at the entrance to the Italian Hospital, on the south side of Queen-square, Bloomsbury (Mr. T. W. Cutler for Comandatore J. Ortelli). Consent.

Kensington, North.—An iron and glass porch in front of No. 79, Ladbroke-grove, Notting Hill (Messrs. Traies & Son, Limited, for Mr. J. Ward).—Consent.

Clapham.—That the consent of the Council, granted November 1, 1898, to the construction and erection of a wood and glass porch in front of "Westview," Thurleigh-road, Balham (Mr. E. U. Story) be not modified by the omission of the words "that the whole of the woodwork of the porch be executed in oak, teak, or other hard wood to the satisfaction of the District Surveyor" in the aforesaid consent.—Agreed.

Hackney, South.—A carriage-shed erected in a yard at the rear of No. 127, Victoria Park-road, and abutting on St. Thomas's-road (Messrs. Meakin & Archer for Mr. B. Applestone).—Refused.

Lewisham.—A house on the south side of Ladywell-road, at the corner of Phoebeth-street, Lewisham (Mr. H. H. Bridgman for Messrs. R. & F. Slater).—Refused.

Marylebone, West.†—A one-story addition to the bath-room of No. 27, Grove-road, St. Marylebone (Vestry of St. Marylebone).—Refused.

Marylebone, West†—An iron and glass covered way at the entrance to the West London Theatre, Church-street, Marylebone (Mr. W. Hancock for Mr. W. Bailey).—Refused.

Strand.—Two three-story oriel windows in front of Nos. 31 and 32, Haymarket, St. Martin-in-the-Fields (Mr. J. Scott for Messrs. J. Brecknell & Turner, Limited).—Refused.

Width of Way.

Fulham.—A one-story modelling-room and a block of water-closets, in the girls' and infants' playground of the schools in William-street, at the corner of Portland-street, Fulham (Mr. T. J. Bailey for the School Board for London).—Consent.

Rotherhithe.†—A grain-pit erected at Trinity Wharf, Rotherhithe-street, at less than the prescribed distance from the centre of the road (the British Drying Company, Limited).—Consent.

Lambeth, North.—Workshops on the east side of Belvedere-road, between Vine-street and Belvedere-crescent (Mr. M. L. Saunders for Messrs. J. Smith & Co.).—Consent.

Finsbury, East.—That Mr. J. Groom be informed that the Council is not prepared to accede to his request for the Council's consent to the retention of a new building in course of erection on a site abutting upon Basterfield-street (formerly French Alley), and New-street (formerly Back Alley), Golden-lane, St. Luke's, at less than the prescribed distance from the centre of each of those streets.—Agreed.

Newington, West.—A building upon the site of Nos. 224, 226, and 228, Tabard-street, Newington (Messrs. Dewrance & Co.).—Refused.

Line of Fronts and Width of Way.

Chelsea.—Building on the south-west side of Park Walk, between Chapel-street and Winterton-place, and the widening of that place and a portion of Park Walk (Mr. C. W. Stephens for the Metropolitan Industrial Dwellings Co., Limited).—Consent.

Finsbury, Central.—Rebuilding of the "Coach and Horses" public-house, No. 39, St. John's-square, Clerkenwell, with projecting angle turrets, &c. (Mr. A. Dixon for Whitbread & Co., Limited).—Consent.

Paddington, South.—A bay window in front of No. 1, Marlborough-gate, Bayswater-road, Paddington, at the corner of Elms-mews (Mr. W. W. Gwyther for the National Provincial Bank of England).—Consent.

Dulwich.—A house with bay windows on the north side of Piermont-road, Peckham-rye, to flank upon a footpath next Peckham Rye Park (Mr. W. Stair for Mr. C. W. Chessell).—Refused.

Kensington, North.—A building on the site of No. 91, Ladbroke-road, Kensington, and part of the grounds belonging to that house, to abut upon Lansdowne-road and Boyne-terrace-mews (Mr. E. K. Purchase).—Refused.

Westminster.†—A one-story addition at the rear of the "White Horse and Bower" public-house, No. 86, Horseferry-road, to abut upon Monck-street (Mr. H. W. Budd for the New Westminster Brewery Company, Limited).—Refused.

Line of Fronts and Temporary Building.

Hampstead.—That Mr. W. Beatty Kingston be informed that the Council is not prepared to accede to his request for the Council's consent to a structure unlawfully set up beyond the general line of buildings in Boundary-road, Hampstead, and without the Council's licence or approval as required by part VII. of the London Building Act, 1894.—Agreed.

Width of Way and Temporary Building.

Whitechapel.—Three temporary wood and iron school buildings, with water-closets and coal-shed, on the west side of Vallance-road, Whitechapel (Mr. T. J. Bailey for the School Board for London).—Consent.

Formation of Streets.

Wandsworth.—That an order be issued to Mr. W. C. Poole, sanctioning the formation or laying out of new streets, for carriage traffic, to lead out of Garratt-lane and Smallwood-road, Lower Tooting (for Mr. G. F. Darby). That the names Pevensey-road, Fairlight-road, Khartoum-road, Rostella-road, and Thurso-road be approved for the new streets.—Agreed.

Woolwich.—That an order be issued to Mr. J. O. Cook, refusing to sanction the formation or laying out for carriage traffic of a new street to lead out of the south side of Nightingale-place, Woolwich Common, and the widening of part of Nightingale-place (for Mr. W. Woodford).—Agreed.

Stepney.—That an order be issued to Mr. J. W. Stevens, refusing to sanction the formation or laying out, for foot traffic only, of new streets on the south side of Redman's-road, Mild End Old Town, and the widening of part of that road (for Mr. H. Hymans).—Agreed.

Buildings on a Cleared Area.

Stepney.—That Mr. J. W. Stevens be informed that the Council cannot consider his letter of October 19, 1898, on behalf of Mr. H. Hymans, as an application for a modification or relaxation of so much of the provisions of Sections 40, 41, and 43 of the London Building Act, 1894, as relates to the proposed erection of forty-six three-story workshops and two stables on the site of Nos. 10 to 36 (even numbers only) inclusive, Redman's-road, Mile End Old Town.—Agreed.

Artisans' Dwellings not Abutting upon a Street.

Bermondsey.—That the Council do make an order as follows:—Whereas Messrs. N. Joseph, Son, & Smithem, of No. 45, Finsbury-pavement, London, on November 15, 1898, under the provisions of Section 42 of the London Building Act, 1894, delivered on behalf of the Guinness Trust, at the County Hall, a plan of an intended dwelling-house, to be inhabited by persons of the working class and proposed to be erected, not abutting upon a street, on a site at the rear of houses on the east side of Weston-street, Bermondsey. . . . . And whereas the Council has taken the said plan, application, and particulars into consideration; now the Council, in the exercise of its powers under Section 42 of the said Act, but in no way otherwise than under such section, does by this order sanction the said plan.—Agreed.

Cubical Extent.

Rotherhithe.—The erection on the east side of Shad Thames, Horselydown, to abut at the rear on St. Saviour's Dock, of a warehouse to exceed in extent 250,000 but not 450,000 cubic feet, and to be used only for the purposes of the trade of a rice merchant (Mr. G. W. Thompson, for Messrs. Carbutt & Co.).—Refused.

Recommendations marked † are contrary to the views of the Local Authority.

* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

BOOKS RECEIVED.

THE ROMANO-BRITISH CITY OF SILCHESTER. By Frederick Davis, F.S.A. (W. Andrews & Co.)

SANITARY ENGINEERING. By Colonel E. C. S. Moore, R.E. (B. T. Batsford.)

Correspondence.

To the Editor of THE BUILDER.

THE DURHAM GALILEE.

SIR,—Antiquaries and historians tell me that my theory as to the Galilee "will not wash." The legal expert tells me it is impossible, for no *precedent* can be found (!) in any historical record of two courts having been held in the same building; negative evidence with a vengeance!

Will some historian, antiquary, or legal expert, therefore, undertake to produce proper evidence to prove:—

1. That the recess containing now the altar of "Our Lady of Pity" was the work of any one but of Bishop Pudsey?

2. That it could have been constructed for any purpose other than for his throne of judicature, for secular as well as for ecclesiastical causes—seeing that the back represents a mere curtain hanging, whilst on the return jambs are portrayed the living symbols of his two-fold authority, royal and episcopal, on either side?

3. That he could have had no possible valid reason for the erection of such a tribunal under the exceptional circumstances of his position?

4. That his recorded intentions of building it *as* a lady chapel were duly carried out?

5. That the miracle which is recorded, attesting to his intentions, and their fulfilment, really took place, and was not invented merely as a *ruse* to justify the carrying out of his altered scheme instead of a lady chapel.

6. That—supposing its truth—the miracle really supports his case; although there be nothing to show whether the spirits were embodied or disembodied; and why *evil* spirits instead of angels should have been employed to perform so excellent a work in indicating a more fitting site for the purpose?

Until these questions shall have been satisfactorily set at rest, I see no possible reason to recede one step from the position which I have taken up with respect to the Galilee, and it remains as a most remarkable testimony in favour of architectural evidence as against historical tradition and even so-called contemporary record.

WILLIAM WHITE, F.S.A.

THE SMOKE NUISANCE.

SIR,—In your "Note" on this subject, wherein reference is made to the possibility of burning anthracite coal, you state that "nearly all the grates and fireplaces as at present made would have to be removed to make way for metal capable of withstanding the great heat produced by anthracite." Will you permit us in fairness to this imperfectly understood and much misrepresented fuel to inform you that, although we have supplied anthracite coal to a great many consumers in London who burn it in all sorts of stoves and grates, we have never yet had a complaint of any extra damage caused by its use? We shall be happy to show any representative of yours grates and stoves in which anthracite coal has been burnt for years, and a public example can at any time be seen in the waiting-rooms at Paddington Station, where anthracite has been exclusively used for the last twelve years.

LONDON WARMING AND VENTILATING COMPANY, LIMITED.

NEW PULPIT, ST. PETER'S CHURCH, PLYMOUTH.—On the 23rd ult. the memorial pulpit, erected as a testimonial to the vicar, the Rev. George Rundle Prynne, M.A., who has now been the head of St. Peter's Parish, Plymouth, for over fifty years, was dedicated. The architect, alike for the new church and the pulpit just dedicated, is Mr. George H. Fellowes-Prynne, the President of the Architectural Association, who is the son of the vicar. The new pulpit has been built up against one of the piers that support the north arcade. The metal work has been carried out by Messrs. Singer & Sons, of Frome, whilst the stone and marble portion was entrusted to Messrs. Harry Hems & Sons, of Exeter.

NEW CLOCK, WILSHAMSTEAD.—A large clock has been erected in the church at Wilshamstead, by Messrs. John Smith & Sons, of Derby. It has a 5 ft. dial facing eastwards, and strikes the hours.

The Student's Column.

SOUND, LIGHT, AND HEAT.—XXII.

HEAT: PRELIMINARY.

THAT part of the science of heat relating to the practical warming of buildings has formed the subject of a previous series of articles in this column; but there are many other aspects of this branch of physics remaining to be described. The term "heat" in a physical sense comprises not only the phenomena incident upon the production of the sensation of warmth and cold, but the method of action and effects generally of variations in temperature in solid, liquid, and gaseous bodies.

As is usual with many fundamental problems in physics, considerable difficulty is experienced in deciding the actual nature of heat, which clearly shows how little, as yet, the subject is understood. Two theories as to the cause of heat have been suggested, the theory of "emission" and the theory of "undulation." These as explained in Ganot (p. 278) may be summarised as follows:—On the emission theory heat is caused by a subtle imponderable fluid, which surrounds the molecules of bodies, and which can pass from one body to another. These "heat atmospheres," which thus surround the molecules, exert a repelling influence on each other, in consequence of which heat acts in opposition to the force of cohesion. The entrance of this substance into our bodies produces the sensation of warmth, its egress the sensation of cold. On the second (undulation) hypothesis the heat of a body is caused by an extremely rapid oscillating or vibratory motion of its molecules; and the hottest bodies are those in which the vibrations have the greatest velocity, and the greatest amplitude.

At any given time the whole of the molecules of a body possess a sum of *vis viva*, which is the heat they contain. To increase their temperature is to increase their *vis viva;* to lower their temperature is to decrease that. Hence, if this view be correct, heat is not a substance but a condition of matter, and a condition which can be transferred from one body to another. When a heated body is placed in contact with a cooler one, the former cedes more molecular motion than it receives; but the loss of the former is the equivalent of the gain of the latter. It is also assumed, says Ganot, that there is an imponderable elastic ether, which pervades all matter and infinite space. A hot body sets this in rapid vibration, and the vibrations of this ether being communicated to material objects set them in more rapid vibration; that is, increase their temperature. The vast majority of authoritative physicists adopt the theory of undulation.

Expansion by Heat.

The term "expansion" here covers contraction also. All bodies expand by the action of heat. In experimenting on this phenomenon, the body dealt with may be examined as to its linear expansion, its superficial expansion, or its cubical (volume) expansion. To prove linear expansion, take a metal rod and fix one end of it to an upright rigidly implanted on a stand; near the other end fix another upright, but do not attach the rod to it, merely allowing the latter to rest on it or pass it through a hole, so that the end of the rod has free play. Place any convenient object against that end of the rod, taking care to note its exact position on the stand. Now apply heat along the centre of the rod and watch the object placed against the free end. It will be noticed that the object is pushed along on the stand as the temperature in the rod rises until a certain limit is reached. Then let the temperature down by removing the heating apparatus, and it will be observed that the free end of the rod slowly goes back, leaving the object which stood against it behind on the stand. In other words, the pushing away of the object denoted expansion of the rod by heating, and its shrinkage back to its former position indicates contraction, whilst the distance to which the object has been pushed will give a measure of the actual expansion. This latter is commonly measured, in the experiment, by placing an index against the free end, which is moved, according to the amount of expansion, round a portion of a graduated dial.

Superficial expansion may be gauged in a somewhat similar manner, but two dimensions have to be taken, and the metal or other substance experimented with ought preferably to be of a tubular form. Cubical expansion may be demonstrated by what is known as Gravesande's ring. At the ordinary temperature a metal ball is made so that it may just be passed through this ring; but if the ball be heated it no longer does so, proving volumetrical expansion; and various apparatus have been devised for showing the expansion of liquids and gases.

Perhaps the most practical applications of this property of expansion, from an architectural standpoint, are in reference to materials of construction. A few statistics may be useful here. Sudden changes in temperature, such, for instance, as a variation of 40 deg. Fahr. in twenty-four hours, do much mischief in such substances as stone, causing cracks to appear in the masonry, and solid angles and edges to break off. The difficulty of obtaining permanently tight joints even with the strongest cements, led Colonel Totten* to institute a series of experiments with a view to ascertain the actual expansion and contraction of granite, sandstone, and marble when subjected to ordinary temperatures. Upwards of thirty experiments on each of these varieties of stone showed the rate of expansion and contraction per inch—which seemed to be uniform throughout the range of temperature employed—to be for granite ·000004825 in. for every degree Fahrenheit; for marble ·000005668 in., and for sandstone ·000009532 in. Supposing then, two coping stones each five feet long be laid in midsummer at a temperature of 96 deg. Fahr. In winter the temperature falls to zero, a change of 96 deg. If the stones contract towards their centres, the whole length of stone put in motion will be 5 ft. In the case of granite, then, the shrinkage amounts to ·027792 in., in marble ·03264 in., and in sandstone to ·054914 in. This shrinkage, small as it seems, gives rise to cracks at the joints, which admit the passage of water; continual shrinkage and expansion must in time crumble the cement and leave the joint permanently open.

Other results arrived at by Adie† are, for rate of expansion of ·00000438 in., and white marble ·00000613 in.

In order to provide for the effects of expansion and contraction in the Clifton Suspension Bridge,‡ and also for the movement occasioned by wind and by the passage of heavy loads across the bridge, the two extremities of the roadway are furnished with jointed ends or flaps, 8 ft. long, which give freedom of motion both vertically, and in the direction of the length of the bridge. In the works referred to, some interesting results of investigation of the strains produced in an iron arch by contraction or expansion of the metal are given.

In reference to expansion in metals during the manufacturing process, Professors Bloxam and Huntingdon observe§ that, by hardening, steel is expanded from its original size when cold, the expansion being greater the higher the temperature to which the steel has been raised and the more quickly the cooling is effected. Notwithstanding this, a given piece of steel may be smaller after it has been hardened than it was before. This apparent anomaly is not difficult to explain. In pieces of steel above a certain size, the hardening does not extend right through to the centre. The surface, when it is suddenly cooled, contracts to a certain extent, and exerts a considerable compressive force on the metal in the interior, which, as it slowly cools, is forced to occupy a smaller volume than it did originally; whilst the hardened portion, which is in a state of tension owing to its having been cooled suddenly, occupies a greater. If, then, the contraction of the interior be greater than the expansion of the exterior, the piece of steel as a whole will be smaller after hardening than it was before, and *vice versâ*. The whole question turns on the relation of the volume of the hardened portion to that which has been only partially hardened.

Molten cast-iron expands at the moment of becoming solid, and solidified bismuth occupies a larger space than bismuth in the liquid state.

The coefficient of linear expansion is the increase of the unit of length of a body when its temperature rises from zero to 1 deg.; the coefficient of superficial expansion is the increase of the surface in being heated from zero to 1 deg.; and the coefficient of cubical expansion is the increase of the unit of volume under the same circumstances. These coefficients vary with different bodies, but for the same body the coefficient of cubical expansion is three times that of the linear expansion.*

The practical applications of the expansion of solids are very numerous. The metal tyres of wheels are usually put on by heating the metal so that the hoop by expansion becomes larger than the wooden or other framework of the wheel. Then, on placing the heated hoop in position as a tyre, and allowing it to cool, contraction of the metal takes place to such an extent as to firmly grip the framework, and the tyre is completed. Ganot alludes to an interesting case of a gallery at the Conservatoire des Arts et Métiers, in Paris, the walls of which had begun to bulge outwards. Iron bars were passed across the building and screwed into plates on the outside of the walls. Each alternate bar was then heated by means of lamps, and when the bar had expanded it was screwed up. The bars being then allowed to cool, contracted, and in so doing drew the walls together. The other bars were then treated in the same manner. And many other cases could be cited.

* Merrill, "Stones for Building and Decoration," 1897, p. 406; also "Silliman Amer. Jour.," vol. xxii., p. 136.
† "Trans. Roy. Soc. Edinburgh," vol. xiii., p. 366.
‡ "Min. Proc. Inst. C.E.," vol. xxvi., 1867, p. 249; *id.*, vol. xxxiii., 1872, p. 141; *id.*, vol. lii., 1878, p. 308.
§ "Metals," 1894, p. 217.

* Atkinson "Ganot's Physics," 1893, p. 294.

OBITUARY.

MR. AXEL PRIOR.—Mr. Prior, who has just died at Copenhagen, was one of the largest slate merchants and purveyors of building materials in Denmark. He commenced business in 1867, and by his own exertions raised his business to the position of the largest of its kind in Denmark. Mr. Prior's uprightness of character as well as his business abilities gained him the general respect and esteem of those who had dealings with him. His son and his partner Mr. Allan Petersen succeed him in the business.

GENERAL BUILDING NEWS.

CHURCH EXTENSION, ST. JOHN'S, FELIXSTOWE.—The present accommodation of St. John's, Felixstowe, having been found to be inadequate it has been decided that the building shall be enlarged. When the extension work is complete, the chancel will be, internally, 35 ft. 6 in. long by 25 ft. 6 in. wide. On the south side there will be a morning chapel 30 ft. 6 in. by 16 ft. 6 in., partly divided from the chancel by an arcade. Two vestries for the choir and clergy are placed on the north side of the chancel, and will be divided by a movable partition, so that the two rooms may be thrown into one. The organ will be placed over the choir vestry, and access will be gained to it by a circular iron staircase placed in the north-west corner. The hydraulic engine, which will supply wind to the organ, will be placed in a small chamber below the choir vestry. The chancel will be lighted by a three-light, mullioned and traceried east window, and by two lancets on the north side. Light will be admitted to the morning chapel by a three-light window at the east end, and single-light windows in the south side. Provision has been made for augmenting and extending the existing heating apparatus, and the gas. The contractor for the work is Mr. Fred Thurman, of Felixstowe, and the architects (who also built the nave and aisles) are Sir Arthur Blomfield, A.R.A., & Sons.

CHURCH EXTENSION, STIRCHLEY, KING'S NORTON.—The memorial stone of the new Church of the Ascension, Stirchley, has just been laid. The architect is Mr. W. Hale, Birmingham, and the builder is Mr. T. Smith.

LODGE, &C., FECHNEY SCHOOL, PERTH.—The Directors of Fechney Industrial School are erecting a new entrance gateway and lodge at this school in the Glasgow-road. These occupy the site of the old entrance and the Toll House. The architect is Mr. David Smart, Perth. The contractors are:—Mason work, A. Beveridge; joiner, D. Crichton; slater, J. Buchan; plumber, Frew & Sons; and plasterer, John Peebles—all of Perth.

SCHOOL FOR BLIND CHILDREN, WAVERTREE, LIVERPOOL.—A new school for blind children has been erected on the site of Wavertree Hall. The building affords accommodation for about ninety children. The principal entrance is approached from Church-road, and is placed in the centre of the main block, which is set back about 150 ft. from the road. On either side of the principal entrance are placed a waiting-room and committee-room, matron's sitting-room, master's office, and officer's dining-room, and behind these a range of five class-rooms, each entered from a central corridor which runs from end to end of the building. These class-rooms are separated from each other and from the corridor by glazed screens. The boys' and girls' staircases, which are 90 ft. apart, are placed at either end of the central corridor, and beyond the boys' staircase is the approach to the gymnasium, which is situated at the south-east corner of the

main block, in front of which it projects. Its dimensions are 40 ft. by 25 ft. The walls are faced internally with buff and light red bricks above a glazed brick dado. The projection formed by the gymnasium is balanced by a projecting wing at the north-east corner of the building, consisting of a miniature hospital. The dining-hall, 47 ft. 6 in. by 18 ft. 6 in., is placed in a wing projecting from the north-west corner of the main block, and communicates through a serving-room with the kitchen department. The first floor is occupied by children's dormitories, baths, wardrobe-rooms, and bed-rooms for the matron, officers, and servants. The basement floor extends under nearly the whole building. There are also wide open areas outside the main walls, and on this floor are constructed large day-rooms for boys and girls, a large work-room 57 ft. by 18 ft. 6 in. for the children's instruction in industrial work, and a kindergarten-room. There is a double lift between the basement, ground, and first floors, and telephone communications between various parts of the building for the use of the matron and staff. The building was designed by Messrs. H. & A. P. Fry, and the work was carried out by Messrs. Morrison & Sons, of Wavertee.

WESLEYAN CHAPEL, CARDIFF.—On the 23rd ult. a new Wesleyan Chapel was opened at Albany-road, Cardiff. The block of buildings consists of the chapel proper, vestries, parlours, class-rooms, &c., which, although spreading over a considerable amount of ground, are connected and tied together by the tower, which rises to a height of about 100 ft. The principal entrance is through a lobby in the tower, and gives access, in addition to the chapel, to a parlour and class-room and vestry on the ground floor, with parlour and other class-rooms on the floors above. The general arrangement of the chapel is nave, transepts, and side aisles, with a choir, organ chamber, and galleries. The building has been constructed with Newbridge stone facings, and Bath stone dressings. The cost of the buildings is 6,800*l.*, and there is sitting accommodation in the church for 936 persons. The contractors are Messrs. E. Turner & Sons, of Cardiff, and the architects Messrs. J. P. Jones, Richards, & Rudgen.

EBENEZER NEW SCHOOLS, NEWCASTLE, STAFFORDSHIRE.—On the 17th ult. the new Sunday schools attached to the Ebenezer Church of the Methodist New Connexion, Newcastle, were opened. The building consists of two floors, the lower comprising five class-rooms for girls and seven for boys, with offices, staircases, &c., and on the upper floor is a room which is intended for two additional class-rooms for girls, this being 40 ft. by 20 ft., with a smaller room 16 ft. by 17 ft., which can be converted into a retiring room. There is also an assembly room measuring 60 ft. by 35 ft. 6 in., with rostrum. The girls' school is entirely new, and the old lecture hall has been converted into the boys' school of seven class-rooms and assembly room upstairs. The entrance is from Merriall-street, with a back entrance from Shoreditch. The work has been carried out according to the plans of Mr. John Lewis, architect, Newcastle, by Mr. Bagnall, contractor, Fenton.

SUNDAY SCHOOLS, COVENTRY.—The foundation-stones have just been laid of new Sunday school buildings in Vine-street. The work is in the hands of Mr. C. Haywood, jun., who is carrying out the plans of Messrs. Steane, the architects. The total cost of the buildings is estimated to be 1,500*l.*

BOARD SCHOOL, SALFORD.—The memorial-stone of the school that is in course of erection by the Salford School Board in Langworthy-road, Pendleton, was laid on the 18th ult. The school will contain three departments, accommodating respectively 376 boys, 376 girls, and 442 infants, making a total of 1,194. The boys' and girls' departments will each contain a schoolroom and four class-rooms divided by movable partitions, together with the necessary cloak-rooms and rooms for teachers. The infants' school is being built on the central hall system, a large assembly hall being provided into which seven class-rooms open, each accommodating from fifty to sixty children. Special provision is being made for instruction in cookery and laundry work for girls, and in manual instruction for boys. A caretaker's house is also being erected at one corner of the site. The architects are Messrs. Potts, Son, & Hennings, of Manchester. The contract for the main building is being carried out by Messrs. Storrs, Sons, & Co., Limited, Stalybridge; the iron and steel work by Messrs. Dunkerley & Co., Manchester; and the concreting and asphalting by Messrs. Davies & Co., Manchester.

INTERMEDIATE SCHOOL, BRYNMAWR, MONMOUTHSHIRE.—The new county intermediate school for Brynmawr was opened on the 23rd ult. Accommodation is provided for 100 scholars. The total cost of the building is 1,883*l.*, and the work has been carried out from plans prepared by Messrs. J. H. Phillips, of Cardiff, and F. Baldwin, of Brecon, by Mr. John Jenkins, of Brynmawr.

SCHOOL, GWAELODYGARTH, GLAMORGANSHIRE.—A new school has just been opened at Gwaelodygarth for the Pentyrch School Board. The new building will be used as a mixed department, accommodation having been provided for 214 children. Mr. Bruce Vaughan, Cardiff, was the architect, and the contractors were Messrs. G. & J. Higgon, of Gwaelodygarth. The schools are divided into five class-rooms. The two large rooms are divided by a glazed movable screen, which will admit when the rooms are open of floor-space for 150 people.

SCHOOL ACCOMMODATION, ALDEBY, SUFFOLK.—A new schoolroom has been erected in the parish of Aldeby. It is 45 ft. long by 20 ft. wide. Mr. Pells, of Beccles, is the architect, and Mr. Dunn, of Beccles, is the builder.

SUNDAY SCHOOLS, SHEFFIELD.—On the 21st ult. the new schools in Rockingham-street, Sheffield, which are attached to the Wesleyan Methodist Chapel, were opened. In the centre of the main front to Rockingham-street is the principal entrance. Right and left of the building are the entrances for boys and girls, and a fourth entrance is provided from Rockingham-lane. On the lower ground floor, which is four steps below Rockingham-street, are provided entrance hall (prepared for use as a gymnasium), and infants' school and class-rooms, laid with wood block flooring. On this floor also are the heating-vault, stores, and a kitchen. From the entrance hall a staircase leads up to the main floor, the greater part of which is occupied by the lecture hall, 50 ft. square. This hall is lighted by ten windows. The ceiling, which is 16 ft. high, is divided into twelve bays, panelled and moulded in pitch pine. At the other end of the hall is a rostrum. Above the lecture hall is the mixed school for boys and girls, having the same floor area as the lecture hall, and is 20 ft. high at the sides and 30 ft. high in the centre. It is flanked by sixteen class-rooms in two stories, the lower ones being divided by sliding partitions. In addition to the rooms already mentioned, there are two large class-rooms opening off the main staircase, also lavatories, &c. The whole of the work has been carried out from the designs and under the superintendence of Mr. Herbert W. Lockwood, architect, Sheffield. The total cost of the scheme is about 4,600*l.*

SCHOOL, CANNOCK, STAFFORDSHIRE.—At the last monthly meeting of the Cannock School Board, plans for the enlargement of Walsall-road Boys' School were presented by Messrs. Bailey & McConnell, architects, of Walsall. The Board approved them, and the architects were instructed to prepare the necessary plans and specifications and submit them to the Education Department for approval.

SCHOOL, CLACTON-ON-SEA.—At a meeting of the church and congregation worshipping at Christ Church, Clacton-on-Sea (Union-Congregationalist and Baptist), the designs of Mr. T. H. Baker, of the firm of Baker & May, architects and surveyors, of Colchester and Clacton-on-Sea, were adopted for the extension of the church new school, including organ with class-rooms, &c., the estimated cost being 2,500*l.*

NURSES' HOME, SUNDERLAND.—On the 19th ult. the new Nurses' Home attached to the Sunderland Infirmary buildings was opened. The new home has been constructed in harmony with the rest of the building in Durham-road by Mr. Walter Scott, contractor, from plans by Messrs. J. Potts & Son, of Sunderland and Newcastle.

CO-OPERATIVE PREMISES, COALVILLE, LEICESTERSHIRE.—New Co-operative Buildings have been erected at Coalville, near the new market, to serve as stores and steam bakery. The premises have cost about 3,000*l.*, and the work has been carried out by Mr. W. Moss, of Coalville, the architect being Mr. T. Fosbrooke (Keites and Fosbrooke, Leicester).

ALHAMBRA THEATRE, BIRMINGHAM.—It is proposed to erect at the top of Corporation-street, Birmingham, a new theatre (Alhambra) with suite of shops, arcade, offices, &c. The plans, which have been passed by the Improvements Committee, were prepared by Mr. Frank Matcham, of London.

CORPORATION BATHS, HUNSLET, LEEDS.—The new baths in Joseph-street, Hunslet, constitute the fourth set of baths erected by the Leeds Corporation. About 12,000*l.* has been or will be spent upon the Joseph-street baths. The exterior is of brick and stone. The large swimming-bath is 75 ft. by 30 ft., and a diving platform and the usual dressing-boxes have been provided. There is also a gallery. The first-class swimming-bath is 63 ft. by 24 ft., and there are closed dressing-boxes on either side. There are also fifteen first and second class slipper baths, and five vapour baths. The buildings were designed by Messrs. Walter Hanstock & Son, architects, of Batley and Leeds, and the various contracts have been carried out by Leeds firms.

PREMISES, BELFAST.—The old premises of the National Bank, at the High-street end of Sugar House Entry, Belfast, have been altered for Messrs. Crane & Sons, Limited, piano and organ manufacturers. The alterations and decorations were carried out by local contractors, under the supervision of Messrs. Young & Mackenzie, architects, Belfast.

RICHMOND WORKHOUSE: PROPOSED EXTENSIONS.—It is proposed to extend the Richmond workhouse buildings, from plans prepared by Mr. E. J. Partridge.

NEW PREMISES, TRAFFORD PARK.—Messrs. W. T. Glover & Co., electric cable manufacturers, have commenced the erection of new workshops and offices, covering two acres of land, in Trafford Park, near the Manchester Ship Canal. Mr. Nuttall is the contractor for the foundations, and Messrs. Southern & Sons the builders for the superstructure. The architect is Mr. Charles Heathcote, Manchester.

VILLAGE HALL, ONCHAN, ISLE OF MAN.—The Lieutenant-Governor of the Isle of Man, Lord Henniker, recently opened a new village hall, which has been erected in the village of Onchan, near Douglas. The hall has been built by Mr. W. M'Adam from designs of Mr. M. H. Scott.

PARISH-ROOM, CUCKFIELD, SUSSEX.—A new parish-room has just been erected at Cuckfield. The room measures about 40 ft. by 20 ft. The architect was Mr. Hellicar, of London, and the builder Mr. S. Knight, of Cuckfield.

FIRE BRIGADE STATION, LEWISHAM.—A fire brigade station is being erected on part of the site of old Lewisham House. There are twelve different sets of married men's quarters, to accommodate one engineer, nine firemen, and two coachmen, with two spare sets. The quarters consist of kitchen, bedroom, and scullery, the engineer having an extra room. There is stabling for four horses. The work is being carried out under Mr. Thomas Blashill, Architect to the London County Council, Mr. R. Pearsall, assistant architect, being in charge of it. The contractors are Messrs. Holloway Bros., of Battersea. Mr. Schneider is the clerk of works.

PROPOSED LODGING-HOUSE, DUNFERMLINE.—It is proposed to erect a lodging-house at Dunfermline. A site has been procured at the corner of Chapel-street and Bruce-street. The building will accommodate 141 people. The architect is Mr. Maclennan, Dunfermline.

THE "CORONET" THEATRE, NOTTING HILL.—The "Coronet" Theatre, Notting Hill, an illustration and a brief description of which appeared in our issue of January 15 last, was opened on Monday. Mr. W. G. R. Sprague was the architect, and Mr. Walter Wallis was the builder. The decorations and furnishing have been carried out by Messrs. Warings. The heating contract was carried out by Messrs. Strode & Co., and the electric lighting work was by Messrs. Sax Slatter & Co.

NEW WING, TRADES HALL, DUBLIN.—On the 24th ult. a new wing to the Trades Hall was opened. The addition comprises six small committee-rooms, three large committee-rooms, and a large hall capable of accommodating several hundred persons. The structure was erected by Mr. Goulding, while the architect was Mr. Beardwood.

THEATRE, SOUTHAMPTON.—The new Grand Theatre at Southampton has been erected at a cost of 20,000*l.* The entire building will be lighted by electricity, with gas as an alternative. Mr. W. Hope, of Newcastle-on-Tyne, was the architect, and the builders were Messrs. Jenkins & Sons, of Southampton.

ISOLATION HOSPITAL, COCKINGTON, DEVONSHIRE.—Cockington Isolation Hospital was opened on the 24th ult. The main building is one story in height, and on the first floor are the principal wards, each measuring 25 ft. by 12 ft., and 11 ft. high. Four beds can be placed in each ward, and a nurse's room between has glass doors communicating with the wards separately. The nurses' bedroom, with bath-room and other offices, are in the rear. Another ward for special or private cases is on the ground floor, where also there are two nurses' rooms, one of which can be used for infectious cases in times of emergency. Designed by Mr. Rowell, of Newton, the premises have been built of local red rock by Mr. H. Phare, of Cockington.

COTTAGE HOSPITAL, LEOMINSTER.—A new cottage hospital is in course of erection at Leominster—the foundation-stone of which was laid on the 24th ult. It is built in two separate blocks of buildings connected by a corridor; the hospital portion and the wards being a distinct building at the rear, whilst the nurses' house faces the street. It is built of red pressed bricks for facings, with terra-cotta panels, ornaments, string and moulded courses, and bay windows, carried up to the roof, terminating with half-timbered gables of oak, which will be treated and rubbed in oil to preserve the natural colour of the oak. All the roofs are of red Broseley tiles throughout. The walls will be plastered with "Adamant," and the ceilings, walls, and floors rendered non-absorbent. An operating-room is included, with large lantern-light, for surgical operations. The contract has been let to Mr. John Watkins, builder, of Leominster, who is carrying out the work from the designs, plans, and superintendence of the architect, Mr. Ernest G. Davies, of Hereford.

ADDITIONS TO HOTEL, BRISTOL.—The new restaurant in connexion with the Bank Hotel at the top of Bridge-street, Bristol, is now completed. In altering a portion of the premises for the restaurant, Mr. Mackay, architect, superintended the reconstruction, which has been carried out by Mr. C. A. Hayes.

EXHIBITION BUILDINGS, GLASGOW.—Mr. James Miller, the architect of the International Exhibition, is preparing a sketch of a covered way from the bridge across the Dumbarton-road to the Industrial Section and the Fine Art Galleries. It is to be made of glass and iron, with space for the display of flowers, and the corridor is to be not less than 35 ft. wide. Mr. Miller suggests that if the older portion of the Kelvingrove Museum, namely, Kelvingrove House, could be removed a very much better position would be obtained for the concert hall on its site, which would enable the restaurants attached to the concert hall to be placed next to the Kelvin, with an uninterrupted view over the park to the west. Authority is to be asked from the Town

Council to take down Kelvingrove House, possession to be given to the Exhibition authorities from January 1, 1900. Borings having been made in connexion with the dome and towers, a rock foundation has been found at an average depth of 17 ft.—*Glasgow Evening News.*

PUBLIC INSTITUTE, SOUTHWARK.—On Monday the Duke of Cambridge opened the institute which has been erected by the trustees of the charities of St. Olave and St. John, at the junction of Tooley-street and Fair-street. The materials used are—blue pennant stone, for the plinth and basement windows; red brick facings, from Mr. Jas. Brown, of Braintree, Essex; and Monk's Park stone for the upper windows, cornices, and copings. The building comprises:—On the basement—A gymnasium, the book-store for the lending library; a club smoking room; men's cloak room, lavatory; and the boiler room for the warming apparatus. On the ground floor.—The principal entrance hall in Fair-street, giving access to the billiard-room and private clubroom, with lavatory attached; and the staircase ascending to the hall. A separate entrance, adjoining the above, is provided from Fair-street to the lending library; and from the open way on the south-east side, the caretaker's apartments, the stairs down to the gymnasium, and the exit stairs from the hall are approached. Iron spiral stairs from the lobby next the billiard-room and lending library respectively give access to the smoking-room and book store in the basement, and a tea and coffee bar is provided, adjoining the billiard-room. The upper part of the gymnasium occupies a part of the ground floor area. Ascending the stairs from the entrance, the large hall is reached on the first floor, the whole of which, fronting on to Fair-street and Artillery-lane, is occupied by it. The site compels the hall to assume a wedge-shaped form on plan, and the platform or small stage is placed at the narrow edge; a small staircase at the north-west angle gives access to a gallery for musicians over the main staircase. In connexion with the platform are retiring-rooms for ladies and gentlemen, and at the south-west angle of the hall is the door leading to the exit staircase before referred to. The caretaker's apartments consist of a kitchen on the ground floor, with stores, and a passage communicating with the library, and two floors of living-rooms, and bedrooms, &c., over the retiring-rooms, and are contained in a separate wing of the building at the south-west angle of the site. The lending library is of irregular shape, and contains bookcases and wall-shelves capable of containing between 8,000 and 9,000 books. The book-store, in the basement, in connexion with the library, is capable of containing about 10,000 additional volumes. The large hall, on the first floor, is about 78 ft. long on its central axis, with a width at the north-west end of about 55 ft., and of about 17 ft. at the south-east end at the back of the platform; it is 25 ft. high to the ceiling, and will seat about 350 persons. It is intended to use this hall as a reading-room in connexion with the library when it is not required for meetings or entertainments. The floor of the hall is laid with wood blocks on a fire-proof foundation, composed of Stuart & Co.'s patent Granolithic flooring; the principal and exit staircases are also formed of this material. The hall is lighted and ventilated by windows towards Fair-street and Artillery-lane, and with sky-lights on the south side. It is warmed by hot-water pipes on the low-pressure system, fitted up by Messrs. Wm. Baily & Sons. Fresh air is also admitted through gratings under the windows into an air-chamber between the wall and dado framing, and the air so admitted is also warmed by the hot-water pipes, which are placed in this chamber. The several portions of the building to be used by the public are lighted by electric light, the installation and fittings having been executed by Mr. W. Mackie. A secondary lighting system by gas has also been fitted up in compliance with the regulations of the London County Council. The architect was Mr. Henry Stock, the architect to the trustees; and the buildings have been erected by Mr. William Shepherd. Mr. Peacock was the clerk of the works.

BUSINESS PREMISES, BELFAST.—New premises for Mr. Rea have been erected in Ann-street by Mr. W. Kerr, under the superintendence of Mr. S. Stevenson, architect. The walls have been finished with glazed tiles by Messrs. Minton & Hollins, through Messrs. W. D. Henderson & Sons, Belfast. Mr. J. H. Crook was the contractor for the ornamental ironwork.

CANON-ROW, WESTMINSTER.—Mr. J. Dixon Butler, Surveyor to the Metropolitan Police, has been appointed architect for the new police-station, with an extension of the chief offices of New Scotland-yard adjoining, to be erected in Canon-row, in place of the station in King-street now being demolished. For that purpose will be taken the buildings at present occupied by the Civil Service Commissioners. That structure, distinguished by its Ionic portico and circular hall, was built for uses of the Ordnance and Transport Office, but proving too small for that department, it was then assigned to the Board of Commissioners for the Affairs of India. The authorship of the building has been ascribed to William Atkinson; but it was built in 1816, from the plans and designs of William Pilkington. Atkinson designed the house (the old office of the Master General and Board of Ordnance) in Pall Mall for Edward, Duke of York and Albany, son of George II., which was afterwards occupied by Henry, Duke of Cumberland. The house then became a subscription club house, called the Albion Hotel, being the first of its kind in the more modern meaning of the word "club," in Pall Mall; it is now the War Office.

FACTORY, BRISTOL.—A new clothing factory has been erected at Staple Hill for Messrs. Wathen, Gardiner, & Co. The premises cover an acre of ground, the main building measuring 210 ft. by 150 ft. The whole of this is lighted from the roof, which is supported on iron columns, with light steel trusses and framing. The whole building is warmed by hot-water apparatus, supplied by Messrs. Crispin & Sons, who have also put in the stoves for the pressing department. The elevations generally are of Pennant stone, with Cattybrook brick dressings and cornices, the central block being entirely of brick, with Broseley tile roof. The general contract has been carried out by Messrs. Cowlin & Son, and the sanitary engineering by Mr. G. Tuckey. The architects for the whole of the works were Messrs. La Trobe & Weston, of Bristol.

PUBLIC CONVENIENCES, BIRMINGHAM.—For some months past the contractor has been engaged in the construction of the underground lavatories, &c., in Bull Ring and the Old Square. The one in the Bull Ring is now complete. Two large apartments have been constructed beneath a paved island just below the Nelson Statue. The island is pear-shaped, and in order to avoid a slope there is a transverse step across the centre. This step approximately marks the division of the space below, the one nearest to the Nelson Statue being for women, while the lower and larger section is for men. Entrance to the women's lavatory is by a semi-circular staircase, protected by an iron railing. There are eighteen steps of York stone, between walls of white glazed brick, the staircase leading to an open space 16 ft. long by 4 ft. wide, paved with black and white tiles. To the left of this space is the lavatory. On the opposite side of the open space are six closets, divided from one another by slabs of dark green marble, reaching to a height of 7 ft. 6 in., and having doors of oiled teak. The wall spaces are of white glazed brick, with a wainscotting of red marble. Light is derived from prismatic pavement lights. The men's department is entered by stairs from each of the two lower corners of the island. It contains a number of radial pattern stalls of white glazed porcelain with red marble jambs, and granite treads. There are seven closets, and the lavatory and dressing-room is an enclosure of woodwork and Muranese glass. The walls, fittings, and paving are similar to those in the women's department. At the top of the wall dividing the two departments is a ventilating fan immediately beneath the central lamp upon the island, the pillar of which forms a ventilating shaft. The entire establishment has been constructed at a cost of 2,000*l.* by Mr. Jennings, of Lambeth, from the designs of Mr. Price, the City Surveyor.—*Birmingham Post.*

BUSINESS PREMISES, PERTH.—Under an Act of Parliament, procured about five years ago, the Police Commissioners of Perth got authority to make a new street from South-street to Mill-street in line with Kinnoull-street and Scott-street. One of the buildings in the street is Brand's-buildings, which is situated at the corner of South-street and Scott-street, and is a four-story tenement of shops, offices, and dwelling-houses. The building was designed and erected under the personal superintendence of Mr. David Smart, architect, Perth. The contractors were:—Mason work, Robert Brand & Son; joiner work, Leith & Lumsden; slater, James Buchan; plumber, James MacLeish; plasterer, John Mackay—all of Perth.

SANITARY AND ENGINEERING NEWS.

REFUSE DESTRUCTOR FOR HARTLEPOOL.—On the 22nd ult. Mr. W. O. E. Meade King, C.E., an Inspector of the Local Government Board, held an inquiry at Hartlepool in reference to the application of the Corporation to borrow 5,793*l.* for the provision of a refuse destructor and depot in Clifton-street, Hartlepool. A provisional contract has been entered into with Messrs. Goddard, Massey, & Warren. Mr. Crummack (Borough Engineer) and the Town Clerk, having given evidence, the inquiry closed.

DRAINAGE AND FORESHORE IMPROVEMENT OF GRANGE, LANCASHIRE.—On the 24th ult., an inquiry was held at Grange-over-Sands, by Mr. W. A. Ducat, Local Government Board inspector, respecting an application by the Urban Council to borrow 10,000*l.* to cover the outlay of a supplementary sewerage scheme and certain enclosure works. Mr. J. H. Ward, Surveyor to the Council, who had prepared the foreshore improvement plans, and Mr. Spinks, C.E., of Leeds, who had designed the drainage scheme, were examined in reference to details.

APPOINTMENT OF SANITARY INSPECTOR.—The Local Government Board has sanctioned the appointment of Mr. J. W. King as a sanitary inspector in Chelsea.

STAINED GLASS AND DECORATION.

STAINED WINDOW, WESTHOUGHTON CHURCH.—Messrs. Clayton & Bell, of London, have in hand a new stained window which is intended to be placed in the north clearstory of St. Bartholomew's Church, Westhoughton, in memory of the late Mr. George Vernon Chadwick. The window will represent the patron saints of England (St. George), Scotland (St. Andrew), and Ireland (St. Patrick); a quatrefoil in the upper part bearing an illustration of the arms of the United Kingdom.

ORGAN CASE, ESSEX CHURCH, KENSINGTON.—Sir John T. Brunner, M.P., has recently presented to this church a new organ case. The work has been designed in the style of the fourteenth century screen work, and has been carried out in oak left in its natural colour. The organ is placed in the south-east angle of the south aisle and shows on two sides to the church, the sides being divided into bays with open and cusped arcading surmounted with a carved cornice. This forms the main stage of the organ case, all the spaces being filled in with burnished metal speaking pipes. The upper portion above the cornice is arranged into gables with traceried panels and corbelled portions carrying a further tier of speaking pipes and finishing in panelled pinnacles and crockets. The work has been designed by Mr. H. Chatfeild Clarke, and has been carried out by the builder of the organ, Mr. Alfred Kirkland.

WINDOW, ST. BARNABAS, HOVE.—A window at the east end of the south aisle of St. Barnabas, Hove, has just been filled in with stained glass. The subject is that of the Nativity. The work was designed and executed in the studios of Messrs. A. Seward & Co., of Lancaster.

FOREIGN.

FRANCE.—M. Blavette, Government architect, has just been elected architect to the Natural History Museum in place of M. Dutert, who has been obliged to resign on account of bad health. M. Emile Bertone, who is now inspector of the works of the new Opera Comique, has been elected inspector of the new Cour des Comptes, the construction of which was entrusted to M. Moyaux. Lastly, MM. Courtois-Suffit and Monduit have been elected architects respectively to the Institut Agronomique and to the Musée Guimet.——A society calling itself "Société des amis de la Médaille," and having at its head MM. Jules Claretie and Roger Marx, has just been formed in Paris to encourage medal engraving.——It is announced that a statue of Jules Ferry is shortly to be erected at Tunis, at the intersection of the Avenue de la Marine and the Palace and Carthage Boulevards.—— There is talk of erecting the monument in honour of Puvis de Chavannes on the Place Perèire, and of giving the name of the great artist to a street newly opened in the neighbourhood, between the Rue Ampère and the Boulevard Perèire.——The President of the Republic has just inaugurated the new Ecole Supérieure de Commerce at Paris. This large building is in the Avenue de la République. The successful competitors in the open competition were MM. Joanny Bernard and Emile Robert.——A tunnel five kilomèters long has been completed lately; it goes through the hills of Hautie, in the neighbourhood of the forest of St. Germain. It goes from Maurecourt to Triel, and is intended to convey the flow from the Paris sewers to the fields below Triel. This work, which has been rendered very difficult by the nature of the ground, has been most successfully accomplished by MM. Bechmann and Launay, Engineers to the City of Paris.——The death of M. Georges Landelle, the painter, is announced. He was a pupil of Cabanel, and of his father, Charles Landelle. He died at the age of thirty-eight. He exhibited, at various Salons from 1885 to 1895, both landscapes and figures.——The death is also announced, at the age of eighty-two, of M. Auguste Decaux, civil engineer, who for many years superintended the ateliers for dyeing the Beauvais and Gobelins tapestries.

UNITED STATES.—In Boston a decided stand is being made against the further erection of what are known as "cheap frame buildings." According to *Architecture and Building*, the conditions under which a large share of the outlying residential sections of the city were built up favoured this class of buildings. The result has been a large growth of cheap frame buildings. These now are becoming, as the land is being closely built up, a menace to the city from fire. The Metropolitan Park Board some time since recognised the dangers from a sanitary point of view, of this crowding of small dwellings on these outlying lands, and has been putting forth efforts to reserve playgrounds and small parks, and now it is thought to be time to determine that at least a measure of safety from fire should be required in these buildings.

CANADA.—More than usual interest attached to the eighth meeting of the Quebec Association of Architects held at Montreal early last month, as it was the occasion of the complete organisation of the Association in accordance with the terms of the Quebec Architects' Act. The first day was entirely devoted to the reports and addresses by the outgoing and incoming presidents. On the second day visits were made to the Architectural Department of McGill University, ably presided over by Professor S. H. Capper, the new building of Chemistry and

Mining, McGill University, &c. The attendance at the business sessions numbered between fifty and sixty.

CALCUTTA.—Mr. A. J. Hughes, Engineer to the Corporation, has drawn up a scheme for the reconstruction of Calcutta. His plan is based on the Bombay Improvement Act, which has recently received the sanction of the Secretary of State, and it aims at such reforms as the abolition of slums, construction of new streets, housing of the working classes, &c.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. Bedford & Kitson, architects, have removed their offices from 12 East Parade to Greek-street-chambers, Leeds.——Mr. F. W. Marks, architect, has removed from 31, Great James-street, Bedford-row, to 3, Staple Inn, W.C.——Mr. Herbert A. Satchell, architect, has removed from 3, Verulam-buildings, Gray's Inn, to 3, Staple Inn, W.C.

STREET FOUNTAINS AND CATTLE TROUGHS.—The Metropolitan Drinking Fountain and Cattle Trough Association have closed their Works Department, intending to place the care of the fountains and troughs under the various vestries. Mr. R. D. Gibbs, who has been for upwards of thirty years connected with the Association as manager of their works at Clapham, and has erected for the Association more than 1,000 fountains and troughs in London and the suburbs, intends still to pursue this business, and no doubt his practical experience in such work will be very valuable. The character of the designs, however, ought to be improved.

PUBLIC IMPROVEMENTS, FALMOUTH.—Mr. H. P. Boulnois held an inquiry at Falmouth on the 26th ult. on behalf of the Local Government Board into an application by the Corporation for power to borrow 5,009*l.* for street improvements and 2,341*l.* for sewerage. The Town Clerk stated that the population at the last census was 12,217. The area was 857 acres, rateable value 39,684*l.*, outstanding loans 14,060*l.* (Urban Sanitary), and 1,620*l.* (Town Council). For improving Market Strand, by filling in the foreshore, they asked permission to borrow 4,559*l.*, and for sewerage works in connexion with that improvement 1,941*l.* Mr. W. H. Tresidder, Borough Surveyor, stated that the scheme he had prepared would do away with the nuisances complained of by the owners.

THE MANUFACTURE OF CALCIUM CARBIDE.—Londoners are evidently keenly alive to the commercial possibilities of acetylene as an illuminant, for, despite the inclemency of the weather on Monday evening last, there was an unusually large attendance at Professor Lewes' second Cantor lecture on "Acetylene" at the Society of Arts. In this lecture Professor Lewes dealt mainly with the commercial manufacture of calcium carbide, and described the forms of electric furnace which are employed for converting the mixture of coke and lime into carbide of calcium. Referring to the possibility of making carbide without the aid of electricity, Professor Lewes said that, although he was aware that Dr. Borchers and other experimenters had claimed that they could produce calcic carbide on a large scale without employing electrical power, yet he was unable to conceive any such method or process which was likely to compete successfully as a commercial product with calcic carbide made in the electric furnace. With regard to the impurities in acetylene made from commercial carbide, Professor Lewes said that sulphuretted hydrogen and traces of phosphoretted hydrogen were nearly always present, and demonstrated how the sulphuretted hydrogen could be easily detected by means of lead acetate; and how, after removal of the sulphuretted hydrogen, the phosphoretted hydrogen could be detected by means of silver nitrate. The lecture next Monday evening will deal with the various types of acetylene generator, and the methods by which the gas may be purified for domestic consumption.

REREDOS, ST. ANDREW'S CHURCH, MELKSHAM, WILTS.—On the 23rd ult., at St. Andrew's Church, Melksham Forest, a reredos which has been erected by Messrs. Hems & Sons, Exeter, as a memorial to the late Mr. R. L. Lopes, J.P., of Sandridge park, Melksham, was dedicated. The reredos is mainly composed of white alabaster from the Derbyshire quarries, but is relieved by tinted material of the same kind. The central portion comprises three panels, with canopies crocketted and cusped, which are supported by trefoil pink marble columns, with carved capitals. The central panel is occupied by a sculptured figure representing the Ascension of our Lord. The side panels contain figures of the Virgin Mary and St. John the Divine, the latter with chalice and book. These panels have a background of gold mosaic. Upon the buttresses above the reredos are figures of four angels in attitudes of adoration, and in the centre is a gilt cross. The re-table is of red-tinted alabaster.

STREET IMPROVEMENTS IN ABERDEEN.—The first meeting of the streets and roads committee of the Aberdeen Town Council was held on the 24th ult. A new street is to be laid out on the Spital estate, running from Bedford-road parallel with the old Sunnyside-road and turning westward to join Bedford-place. The street is to be 50 ft. in width. Wellbrae-street, Mannofield, will in future be known as Wellbrae-terrace. It was reported that a piece of ground had been bought at Don-terrace, Woodside, to allow of the thoroughfare being widened to the uniform limit. A letter was read from Mr. R. G. Wilson, architect, with regard to certain alterations on the Angusfield property, belonging to the Rubislaw Granite Company, but the committee could not see their way to agree to the suggestions contained in the communication. Mr. Pirie, contractor, was the successful offerer for the macadamising and laying of a kerb and channel in Chestnut-row, the amount of the contract being 263*l.* 18s. 3d.

CONDITION OF LONDON BRIDGE.—Mr. Norrish, Surveyor to Southwark Board of Works, has reported to his Board the results of his examination of the arches beneath Railway Approach, Borough High-street, on which the commencement of London Bridge is built. He found cracks in them, and is taking steps to watch if these develop.

FONT, ST. ANDREW'S CHURCH, PAIGNTON.—Messrs. Harry Hems & Sons, of Exeter, have just placed in the newly-built Church of St. Andrew, Paignton, an old Norman font. The font has been restored, all the whitewash having been removed, and the original patterns of the sculpture exposed. Messrs. Hems have mounted the restored font on a base of Devonshire variegated marble, with a supporting cluster of eight columns of Purbeck marble. The font itself is of Paignton red sandstone.

BUILDING INDUSTRIES' FEDERATION.—A federation, comprising all the branches of the building trade, has recently been formed at Newport, Monmouth. The federation is worked upon similar lines to similar organisations in other large towns. Mr. Charles Jones is the secretary, and Mr. W. Thomas treasurer.

FOREST GATE AND UPTON PARK. — Messrs. Tuckett & Son offered by auction at the "Princess Alice" Hotel, Romford-road, on the evening of the 24th ult., the fifteenth portion of the Plashet Hall Estate, comprising sixty-four lots in Halley-road, which realised from 72*l.* to 76*l.* per lot, and twenty shop lots in White Post-lane which made from 115*l.* to 143*l.* per lot. There was a very large company present and much keen competition, the whole of the eighty-four lots being quickly disposed of for a total closely approaching 7,300*l.* This result shows a further marked appreciation in value, consequent upon the continuous development of the neighbourhood. The auctioneers have now sold about 2,000 lots upon this portion of the Gurney Estate, most of which have been built upon and occupied, whilst many more houses are in course of erection, and the demand exceeds the supply.

APPOINTMENT.—Mr. Henry Lord, of Manchester, has been appointed architect of the proposed cottage homes for the Salford Union at Kenyon Junction.

CAPITAL AND LABOUR.

A WAGES QUESTION, BRISTOL.—A meeting of the Bristol Trades Council was held on the 24th ult., at the "Crown and Dove" Hotel, Bridewell-street, under the presidency of Mr. J. O'Grady, when Messrs. E. H. Jarvis and C. Lambert brought forward a matter which had been taken in hand by the Bristol branch of the Amalgamated Society of Carpenters and Joiners. They respectively moved and seconded the following resolution:—"That this Council expresses its disapproval of the action of the Bristol Board of Guardians with respect to the advertisement in the local papers for a carpenter at 29s. per week, and urges that the recognised rate of wages for the city should be paid by the Guardians, as they hold the opinion that a public body should not endeavour to get its work done at rates less than private employers have to pay." The resolution was carried.

STAFFORDSHIRE BUILDING TRADE.—The building trade in the Potteries for the season of the year is very good, and there is every prospect of a continuance of the same. There are a number of large contracts in the district besides the extra artisans' dwellings that are being erected in most of the pottery towns. Bricklayers report employment as good and they are fully employed. Joiners are busy with a small percentage out of work. These are principally out-of-door hands. Plumbers are working well, but painters are not so busy. Plasterers report employment as good, with none out of work. Stonemasons are busy and overtime is worked in some yards. Labourers in the building trade are well employed, and through the extension of the tramways what surplus labourers there were have found work. In the brick and tile yards throughout the district orders are plentiful, and the operatives are working the full complement of hours usual at this time of the year. At Crewe all branches are busy, and full time is general. At Leek there are good orders, but the wet weather has stopped all out-door work. At Stafford all operatives are well emyloyed.—*Staffordshire Sentinel.*

LEGAL.

THE WORKMEN'S COMPENSATION ACT:

CASE IN COURT OF APPEAL.

THE case of Billings *v.* Holloway came before the Court of Appeal composed of Lords Justices A. L. Smith, Rigby, and Collins on the 19th ult. on the appeal of the plaintiff from the judgment of Judge Addison, Q.C., sitting at the Clerkenwell County Court. It appeared that the plaintiff was a labourer in the employment of the defendant, a builder, who, in July last, was erecting a building in the Clerkenwell-road under a contract with the building owner. The building was in substitution of one which the defendant had previously demolished, and when erected according to the plans the new building would be a four-storied building over 30 ft. in height. The new building was being erected by means of scaffolding, and during the course of the building operations a brick fell upon the plaintiff's head and injured him. When the accident happened no part of the building had reached the height of 30 ft., the highest point being 26 ft. from the basement. The plaintiff claimed compensation under the Workmen's Compensation Act, 1897, but the Judge in the Court below held that as the building was not more than 30 ft. in height the Act did not apply, and entered judgment for the defendant. The material part of Section 7, sub-Section 1 of the Act runs:—"This Act shall only apply to employment . . . on in or about any building which exceeds 30 ft in height and is either being constructed or repaired by means of a scaffolding or being demolished. . . ."

Mr. Bassett Hopkins now submitted that the Act applied if the building in course of erection was when finished to exceed 30 ft. in height. The test was not the actual height of the building at the time of the accident. The test was what would be the height of the building when completed.

Lord Justice Smith, without calling upon Mr. Ruegg, Q.C., and Mr. A. W. Groser for the defendant, in giving judgment said that if the plaintiff's contention was right, the court ought to add to Section 7, sub-section 1 of the Act, the words, "or which may hereafter exceed 30 ft. in height," and that could not be done. He thought the decision of the learned County Court Judge ought to be affirmed.

Lord Justices Rigby and Collins concurred, and the appeal was accordingly dismissed.

THE WORKMEN'S COMPENSATION ACT:

CASE IN THE COURT OF APPEAL.

THE case of Powell *v.* Brown and Another, which came before the Court of Appeal on Saturday, the 26th ult., raised an important question relating to the liability of builders under the Workmen's Compensation Act, 1897. The case came before the Court on the appeal of the defendants, Messrs. Brown & Backhouse, builders and contractors, of Chatham-street, Liverpool, and it appeared that William Powell, the man in respect of whose death the proceedings were taken, was in their employment as a carter. On the day that the accident happened one of the defendants' carts was standing in the street near to the entrance of their premises, upon which certain timber taken from their premises had been placed, it being Powell's duty to arrange the timber in the cart. He was standing on the timber in the cart, and was waiting for some bolts to complete the load, when accidentally a piece of the timber tilted and threw him into the road, and in consequence of the injuries he received he died. Judge Collier, sitting at the Liverpool County Court, held that the defendant's premises were a "factory" within the meaning of the Act, and that the accident arose out of and in the course of the deceased's employment, and that that employment was employment on or in or about a factory. He accordingly awarded the widow 243*l.* odd. The defendants now appealed on the ground that Powell's employment was not employment "on or in or about a factory" within the meaning of Section 7 Subsection 1 of the Act in question.

Their Lordships at the conclusion of the arguments of Counsel, dismissed the appeal, holding that the question in issue was one of fact, and that the County Court Judge had found that the employment of Powell was "on or in or about a factory."

Mr. Joseph Walton, Q.C., and Mr. Aspinall Tobin were counsel for the appellants; and Mr. Ruegg, Q.C., and Mr. H. Thomas for the respondent.

THE WORKMAN'S COMPENSATION ACT.

ON the 24th ult., at Southwark County Court, his Honour Judge Addison, Q.C., heard an application under the Workman's Compensation Act. The applicant was James Williams, a window blind painter, of North-street, Kennington-road, and the respondent William Duncan, window blind manufacturer, of Newington-causeway.

His Honour: Is it a point of law or fact in this case?

Mr. Sherman (for the respondent): A point of law, sir.

His Honour: I have tried only three cases under this Act, and each has contained a point of law for the Appeal Court. I have disposed of no less than six points of law in those actions, and, curiously enough, have had to find for the respondents in each case.

The applicant stated that he entered the respondent's employ as a blind painter on July 6, and remained until August 30, when he was seized with violent pains in the abdomen, and had to leave work. He had to call in a medical man, who said he was suffering from colic. In consequence, he had been unable to work for fifteen weeks, and was still far from well. He had been a painter twenty-

five years, and had never before had colic. In cross-examination, the applicant said that ordinary white lead was used by him while in the respondent's service, but the Home Office regulations were not complied with. The weather was exceedingly hot at the time.

The respondent denied that the Home Office regulations were not carried out in his factory.

Mr. Sherman submitted that the applicant must fail, because illness contracted through employment was not an accident within the meaning of the Act, which read :—"If in any employment to which this Act applies personal injury by accident arising out of and in the course of the employment is caused to a workman, the employer shall be responsible." This was not "injury by accident." This point was mentioned when the Act was in the House of Commons. The question of the "phossy jaw" was then raised, and it was asked if this could be called an "accident." The answer of the Government was that they were advised not. If lead poisoning was to be an accident within the meaning of the Act, it would have been made clear by "accident" being defined. Nobody could say in plain English that sickness was accident.

His Honour: I must construe the word "accident," so meant by the Act, not in the dictionary sense. Sickness in a broad sense is an accident of life.

After further argument on this point, his honour found for the respondent on the ground that the applicant had not suffered "personal injury caused by accident." He, however, assessed the applicant's damages at 6*l.* 10s., in view of an appeal.

IMPORTANT ACTION BETWEEN BUILDERS MERCHANTS AND A FIRM OF BUILDERS :

CASE IN THE COURT OF APPEAL.

THE case of Chapman Bros. *v.* Harding Bros. came before the Court of Appeal, composed of Lords Justices A. L. Smith, Rigby, and Collins, on the 29th ult. on the defendants' appeal from the judgment of Mr. Justice Darling, sitting without a jury in the Queen's Bench Division on February 24 last.

Mr. Montague Lush appeared as counsel for the defendants (the appellants); and Mr. Mattinson, Q.C., and Mr. Sinclair Cox for the respondents (the plaintiffs).

It appeared from the opening statement of Mr. Lush that the plaintiffs were builders' merchants, carrying on business at Croydon, and they were the sole agents of the Silicon Plaster Manufacturing Company in the district of Croydon, The plaintiffs claimed against the defendants, a firm of builders carrying on business in the neighbourhood of Haslemere, Surrey, 19*l.* 18s., the price of granite silicon plaster manufactured by the company and supplied to the defendants in March and April, 1897. The defendants pleaded that the plaster was sold under an implied warranty as being reasonably fit for the purpose for which it was bought, but owing to its unfitness they had suffered damage, for which they counterclaimed. Mr. Justice Darling gave judgment for the plaintiffs both on the claim and counterclaim, and from this decision the defendants now appealed. The learned counsel stated that the defendants in the early part of 1897 entered into a contract with a Mr. Leigh Smith to do some extensive work at his house at Haslemere, such work being carried out under the direction of Mr. J. W. Penfold, architect. During the course of this work Messrs. Harding Bros. had to plaster a very large number of walls, and having used on a previous occasion granite silicon plaster they ordered a parcel from the plaintiffs, who were the company's agents in this district. Messrs. Hardings used other kinds of plaster in addition to the granite plaster in several of the rooms, but, with regard to the granite plaster, with the most disastrous results, as after the plaster had been put on the walls and the paper put on the plaster an extraordinary growth of fungus developed which gradually ate into the paper and afterwards the walls had to be stripped and re-papered, and it was in consequence of the expense Messrs Hardings were put to with regard to this that they made their counterclaim. Mr. Justice Darling held that Messrs. Hardings had not proved that the defect was due to the plaster and gave judgment against defendants. The learned Counsel said that he should not have appealed on a question of fact if he did not think that the evidence all pointed in his clients' favour.

Lord Justice Smith: I suppose the contention is that it is the fault of the walls and not of the plaster?

Mr. Lush: Well, Messrs. Hardings used four kinds of plasters, using some in some rooms and not in others. All the rooms where the granite plaster was used turned out as I explained, and all the rooms which had the other three plasters were perfectly good. Messrs. Chapman Bros. contended that the cause of the defect was that there were some kinds of bricks which unfortunately did not suit this particular granite plaster, and during the evidence it was admitted that they had had two cases before in which the granite plaster had turned out badly. They said that some bricks had got sulphur or salt in them, which did not suit that particular plaster. The learned counsel said that the house in question was a large one, a portion of which was very old, and it was proved that there were four different classes of bricks on which the plaster was used; but notwithstanding that, where the granite plaster was used the result was the same. There was still a further answer to this suggestion of Messrs. Chapman Bros., and that was that where the plaster was used on stone walls in the house the result was exactly the same, viz., the fungus growth occurred.

Mr. Mattinson, on behalf of Messrs. Chapman Bros., said that so far as the counterclaim was concerned, Messrs. Hardings proved that they had spent 23*l.* odd in repairing the mischief alleged to be done by the plaster in question, and if his learned friend's case was right Messrs. Chapman Bros. would be liable for this 23*l.*, or the greater part of it at any rate. It was also suggested that they (Messrs. Hardings) were entitled to damages amounting to 54*l.*, or thereabouts, for penalties which they alleged in their particulars they had actually paid to Mr. Leigh Smith who employed them. At the trial it turned out that they had not paid Mr. Leigh Smith sixpence.

Mr. Lush: Is that so?

Mr. Mattinson replied that he thought he was right in stating that, in point of fact, the money had never been paid. But, apart altogether from that, it was perfectly clear, on a point of law, that that damage could not be recovered against his clients, because there was no suggestion that there was any communication to them—that was to say, to the vendors of the plaster—that the stuff was to be used in connexion with a contract where the purchaser was under a penalty to complete by a certain time. Such a thing was never suggested until long after the goods were delivered, and long after the trouble had manifested itself

In answer to Lord Justice Smith, the learned counsel said that the granite plaster was used on both bricks and laths, and the peculiarity was that where it was put on bricks something was wrong, but where it was put on laths or on ceilings it was perfectly right. That was a very important circumstance to remember. He suggested that that proved the trouble was due to the place where the plaster was applied.

Lord Justice Smith: If you can show that this plaster was good on some part of the brickwork and not on others you would have had some foothold; but, as I understand, this plaster was bad wherever it was put on brick.

Lord Justice Rigby: Brick or stone. Where it was put on stone it went wrong.

Mr. Mattinson said it was proved that the plaster sent to Messrs. Hardings was only a portion of a much larger quantity of the stuff manufactured, which was sent to other people and there were no other complaints from the other people whatever, with regard to that particular bulk of manufacture. The learned counsel, continuing, said that there were a great many things which must not be lost sight of, and one of the chief was that the purchaser of the plaster had to mix it according to directions, which were sent on delivery of the parcel. The trouble might have occurred through that; Messrs. Chapman Bros. had no means of knowing. Again, there was evidence that the house was damp, and had ivy upon it. It must also be remembered that nearly all the plaster that was used in the house was granite plaster, and Mr. Moore Smith, an architect who had inspected the work, had said that there were not two dozen patches in the whole place, and that he did not think they could be due to anything in the plaster; and a Mr. Turner, also an architect, corroborated Mr. Smith. The learned counsel, in conclusion, submitted that it was for Messrs. Hardings to make out their case on their counterclaim, and this he contended they had not done. He also contended that there was no implied warranty of the plaster under Section 14 of the Sale of Goods Act, 1893.

Mr. Sinclair Cox having followed on the same side, and Mr. Lush having replied,

Lord Justice Smith, in giving judgment, after having stated the facts, said that there could be no doubt that Messrs. Chapman Bros. were entitled to the amount they sued for; or, at any rate, for that portion which represented the price of the plaster supplied for the rafters, as distinct from that supplied for brickwork and stone. He could not help thinking that, on the order given by Messrs. Hardings to Messrs. Chapman Bros., there was an implied warranty given by the latter that the plaster which was going to be supplied was reasonably fit for the purpose for which it was known to be put by Messrs. Hardings. On the other part of the case, he thought the evidence showed conclusively that the vice was in the plaster and not in the bricks, and although he was sorry to differ from his brother Darling on a question of fact, he felt that the case must go down for a new trial, for the damages to be assessed on the counterclaim. He thought that the parties would be well advised if they could agree as to the damages, and so put an end to the whole matter.

Lords Justices Rigby and Collins concurred.

It was ultimately arranged that judgment should be entered for the plaintiffs on the claim for 19*l.* 18s., and that the case should go back for a new trial for damages to be assessed on the counterclaim. The appeal was accordingly allowed with costs.

EMPLOYERS' LIABILITY CASE.

IN the Recorder's Court, Belfast, on the 29th ult., before his Honour Judge Fitzgibbon, an action was brought under the Employers' Liability Act by Samuel M'Michael, 25, Jennymount-street, Belfast, labourer, against Jacob W. Lester, Milewater-road, Belfast, builder and contractor, to recover 124*l.* 16s., loss and damage sustained whilst working in the defendant's service at Milewater-road, Belfast, where, plaintiff alleged, he received injuries to his right hand, resulting in the loss of his thumb, by a defective crane.

Mr. Hanna (instructed by Mr. M'Erlean) represented the plaintiff, and Mr. Thomas Harrison (instructed by Messrs. Bigger & Strahan) appeared for the defendant.

Mr. Hanna, in opening the case, said the facts were as follows:—M'Michael, who was a labourer, was employed on August 12 at a crane. The crane was used for the purpose of raising timber logs out of a pond, and they were thence placed upon a carriage, on which they were carried through the yard. It was customary that a man should assist the person working at the crane, as the logs were about two ton in weight, and that was, of course a great strain on the crane. His client had raised one of the logs a certain distance. There should be a man to assist in pushing the log on the carriage at this stage, as the log was on tension. If there was no assistant the method was to put the crane out of gear when the log was suspended in its place. In running the crane out of gear his client's hand had been caught between the cogs, with the result that the right thumb was torn away from the hand. Since that ccident took place a wooden wedge had been used for stopping the crane. It was whilst he was holding the crane handle, and whilst the log was in tension, that the handle slipped into the machine, and his thumb was caught in the manner described. His client had been earning 16s. a week, and for seven weeks the employer gave him full wages, but when he went down at the end of eight weeks he would not give his client any more money unless he came into the yard as a working man. There would have been no difficulty in calling a person to assist him, but on that occasion there was no one near to do so.

Plaintiff, in reply to Mr. Harrison, said on the eighth week subsequent to the accident defendant threatened to cut off his wages if he would not stop his nonsense with the solicitor. Witness saw a solicitor three days after the accident took place. Defendant told him his job would be open for him when he got better, and asked him to do some light work. Witness did not sign an agreement (in consideration of a course plaintiff had taken) that he would forego any other claims he had under the Workmen's Compensation Act of 1897, but he put his mark to a paper.

The defendant deposed that the crane in question was a modern one, and perfect in its arrangements. The logs in question were light as compared to the lifting capacity of the crane, so one of the handles was taken off. If the plaintiff had been in his right place at the handle, he would have been 5 ft. or 6 ft. distant from the cogs. No change had been made in the machine since the accident. From the bend of the handle to the cog-wheels the distance would be 2 ft. or 3 ft. It would not be possible for the handle to slip in that distance. Plaintiff assisted a sawyer at the machine. Witness had suggested that the plaintiff had left his place and was leaning against the wheels when his hand was caught.

Mr. Hanna stated that if they failed under the Employers' Liability Act they were entitled to proceed under Sub-section 4 of Section 1 of the Workmen's Compensation Act of 1897, which stated that "the Court in which the action was tried shall, if the plaintiff shall so choose, proceed to assess such compensation as the plaintiff may be entitled to under this Act, and shall be at liberty to deduct from such compensation all the costs which in this judgment have been caused by the plaintiff bringing the action instead of proceeding under a new Act."

His Honour said with regard to the liability under the old Employers' Liability Act, he thought it was perfectly clear that that accident was brought about by negligence of the man himself. It was stated that two men were engaged at the crane, one a sawyer and the other a man at the wheel to turn it. What right had he to commence working in the absence of the sawyer? If he had worked with the sawyer the accident would not have occurred. Then the plaintiff said that there was some imperfection in the crane, and that the handle went in, and his hand was injured by that defect in the crane. The answer to that was the evidence that the crane was a perfect crane. The accident could not be sustained under the Employers' Liability Act. Under the new Act Mr. Hanna had shown how they could proceed. Defendant was bound to compensate plaintiff so long as he was disabled from working. When a medical certificate could be obtained that plaintiff was capable of working defendant could stop the weekly allowance. His Honour thereupon granted the following certificate:—"I certify for 8s. a week from second week after the accident, credit to be given for the sums allowed, and credit also to be given for the costs of that procedure."

MEETINGS.

FRIDAY, DECEMBER 2.

Architectural Association: Discussion Section.—Mr. A. E. Henderson on "Santa Sophia, Constantinople, and Excursions into Asia Minor." 7 p.m.

Glasgow and West of Scotland Technical College (Architectural Craftsman's Society).—(1) Mr. D. Bennet Dobson on "Calculations Simplified." (2) Mr. W. H. Baxter on "Shoring and Slapping." 8 p.m.

SATURDAY, DECEMBER 3.

Carpenters' Hall, London Wall.—Building and Sanitary Construction Examination (oral). 12 noon.

MONDAY, DECEMBER 5.

Royal Institute of British Architects.—(1) Election of Candidates for Membership. (2) Mr. R. W. Gibson, of New York, "On Fireproof Construction of Buildings in the United States." 8 p.m.

Society of Engineers.—Mr. G. Thudichum on "The Bacterial Treatment of Sewage." 7.30 p.m.

Society of Arts (Cantor Lectures).—Professor Vivian B. Lewes on "Acetylene." III. 8 p.m.

Leeds and Yorkshire Architectural Society.—Mr. Max Clarke on "Brickwork Tests"—illustrated. 6.30 p.m.

Liverpool Architectural Society.—Mr. William H. Thorp on "Early Italian Renaissance Sculptors and their Work." With Limelight Illustrations. 6 p.m.

TUESDAY, DECEMBER 6.

Institution of Civil Engineers.—(1) Further Discussion on Mr. Stanley Robert Kay's paper on "The Effect of Subsidence due to Coal Workings upon Bridges and Other Structures;" (2, time permitting) Mr. F. Fox on "The Ventilation of Tunnels and Buildings." 8 p.m.

Northampton Institute, Clerkenwell (Lectures on Architecture).—Mr. F. Bond on "Buttresses, Pinnacles, and Flying Buttresses." 8 p.m.

Royal Victoria Hall, Waterloo-road.—Mr. C. Field Bayley on "Photography in Colours." 8.30 p.m.

WEDNESDAY, DECEMBER 7.

British Archæological Association.—The Rev. W. S. Lach-Szyrma, M.A., on "The Ancient University of Britain. 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Society of Arts.—Mr. W. T. Maud on "Egypt and the Soudan, in 1897 and 1898." 8 p.m.

THURSDAY, DECEMBER 8.

Society of Antiquaries.—8.30 p.m.

Institution of Electrical Engineers.—(1) Professor Oliver Lodge, F.R.S., on "Improvements in Magnetic Space Telegraphy;" (2, time permitting) Mr. Sydney Evershed on "Telegraphy by Magnetic Induction." 8 p.m.

FRIDAY, DECEMBER 9.

Royal Institute of British Architects.—Annual Dinner, to be held at 7.30 p.m., in connexion with the Birmingham Architectural Association, at the Grand Hotel, Birmingham. The President, Professor Aitchison, R.A., will hold a reception at the Rooms of the Society of Artists between 5 and 6 p.m., and a short business meeting will be held immediately afterwards, and before the dinner.

Architectural Association.—Mr. Edwin T. Hall on "The Position of Architecture among the Fine Arts." 7.30 p.m.

Institution of Junior Engineers (Westminster Palace Hotel, Victoria-street).—Mr. E. A. Heath on "British Cable Tramways, and their Construction." 8 p.m.

SATURDAY, DECEMBER 10.

British Institute of Certified Carpenters.—Visit to the Charterhouse, 3.30 p.m. Annual Meeting at Carpenters' Hall at 6 p.m.

RECENT PATENTS:

ABSTRACTS OF ACCEPTED SPECIFICATIONS.

Open to opposition until January 9.

[1897] 25,275.—STAY OR CROSS WIRES FOR WIRE FENCING: *S. G. Mooney & W. J. Mooney.*—The invention relates to an apparatus for applying stay or cross wires and weaving them upon the longitudinal wires of a fence by means of a revoluble shaft made in the form of a crank and fitted with slotted journals for engaging the longitudinal wires, and with perforations for the stay wires which pass through the journals and wind upon spool spindles secured to the crank portion of the shaft.

25,293.—"A BRICK THAT REQUIRES NO BURNING": *J. Bliss.*—The brick is composed of sand ½ bushel, coke breeze ½ bushel, coal dust ½ bushel, and Portland cement ½ bushel. The ingredients "will make when mixed together twenty-five of the improved bricks that require no burning."

25,388.—COMPOSITIONS FOR USE IN CONSTRUCTING ELECTRICAL HEATING APPARATUS AND RESISTANCES: *L. Parvillée.*—Powdered nickel (60 parts) and washed plastic clay (40 parts) are mixed, dried, and pressed, the moulded articles are baked with charcoal in a closed receptacle at a temperature a little below nickel's melting point. The parts of the articles to which the contact devices are connected are reinforced by adding to them before they are subjected to pressure powdered nickel (90 parts) and washed plastic clay (10 parts).

26,466.—FURNACE OR DESTRUCTOR FOR BURNING HOUSE AND TOWN REFUSE, &c.: *W. Saint, H.M. Inspector of Mines.*—The leading feature of the contrivance is the construction of furnaces or cells, side-by-side, back-to-back, or otherwise, which communicate with a common distributing flue at the rear end and with a further flue at the forward end under the control of dampers or valves, which are so manipulated as to cause the uncomsumed gases of one furnace to pass into any one of the other furnaces, and thence into the flue at the front end of such cell before they escape into the chimney.

26,800.—MANUFACTURE OF PAINTS, ANTI-CORROSIVE COMPOSITIONS, &c.: *C. J. Grist.*—Linseed or other drying oil is partially oxidised by heat, after the addition of litharge, to about 400 deg. Fahr., then thoroughly dried fibres of hair, jute, &c., are immersed into the cooled oil, but immediately taken out again; then the dipped fibres are placed in a hydro-extractor for clearing them of superfluous oil, carded, spread on wire gauze or netting, exposed to a current of heated air, and turned about, until each particle of oil on them is oxidised and dried; the fibres are again subjected to the foregoing process, until each of them is coated with oxidised oil; they are then ground together by rollers, colouring matter being added—say, for each 100 lbs. of raw material, from 7 lbs. to 10 lbs. of chrome, or Brunswick blue, or ochre. The mixture, when cool, is placed in a vessel containing 33 lbs. to 45 lbs. of ketone or other solvent, and then are added from 8 lbs. to 16 lbs. of shellac, 8 lbs. to 16 lbs. of gum, 8 lbs. to 16 lbs. of resin, 2 lbs. to 4 lbs. of methylated spirits, and 2 lbs. to 4 lbs. of barytes, or borate of manganese, as a drier. For anti-corrosive paints colouring matter is not added, but the fibres are reduced with spirit to the consistency of paint, from 1 to 5 per cent. of arsenical or other salt being added at the time of rolling, to destroy living organisms.

27,016.—APPARATUS FOR BURNING ACETYLENE AND OTHER RICH GASES: *A. C. Fraser.*—The invention provides for making a mixture of the gas with air, the admixture taking place in the flame by conducting the gas and air under pressure to the burner and discharging them therefrom in minute jets impinged against one another so as to spread the gas and air into an extremely thin film of mixed gas and air; in a modification, each burner is constructed with two ducts or conduits, for air and gas respectively, terminating in jet apertures, the two ducts being put into communication, by cocks and pipes, with the two sources of supply.

27,214.—SELF-CLOSING VALVE FOR USE WITH GAS BURNERS: *T. Thorp.*—In order to prevent leakage is devised a safety-valve as follows:—Before the burner tap or burner is put a valve chamber having an inlet from the gas-pipe and an outlet to the burner; the side of the chamber opposite the inlet is formed of a flexible diaphragm or of a movable bell, sealed with mercury, glycerine, &c.; this flexible surface is slightly pressed by a spring or weight so that when it, or a valve connected to it, rests against the orifice, a much greater pressure than exists in a gas-pipe is required to lift it; when gas is turned off at the meter while the burner tap is open, the diaphragm or valve is pressed against the orifice by the weight or spring, and the orifice being small, remains closed when the meter tap is turned on again, whilst gas cannot escape through the open burner tap. When the gas is to be lighted the diaphragm must be drawn back; the gas pressure keeps it in position.

27,509.—ELECTRICAL CURRENT METER: *J. Möhrle.*—For driving the counting work swinging coils traversed by the current are influenced by a fixed coil in a manner dependent upon the current to be measured; the pendulum, made of a cross-bar with two arms carrying a tripartite coil, is suspended on springs; the transmission to the counting work is effected so that the latter is operated without a special driving device, influenced only by the pendulum, but the driving of the counting work is effected by the pendulum itself, thus friction is reduced to a minimum.

28,618.—FIXING-BLOCKS: *G. Connell.*—These are composed of a backing of common brick, concrete, stone, or other material, and a facing piece of wood fixed to the backing; the wood-facing is attached to a brick-backing by means of grooves or sinkings filled with cement after being tightened with wedges, and to a cast concrete backing by bolts passing through, or metal strips, or sinkings for filling.

29,008.—MANUFACTURE OF CALCIUM CARBIDE: *J. Bastick & W. A. Thornton.*—Coke and lime, either separately or roughly mixed, are passed together to the grinding machine, where they are reduced to the proper size prior to entering the elevator buckets, the ground and mixed material is then passed to a trough which conveys it to the electrical furnace wherein the current fuses the two materials.

29,224.—WATER TAPS: *A. Wren.*—The water tap has two valves, one being the ordinary screw-down valve and the other being a plug valve fitted in the passage that leads to the screw-down valve; the passage is bored out taper-wise for a hollow tapered plug which works tightly therein; an opening in one side of the tapered plug communicates with the supply passage, and a short spindle passes down a stuffing-box, having a knob or handle at its lower end; thus water may be cut off from the screw-down valve, which can be then removed without allowing water to escape from the tap.

29,657.—FIXING PANES OR PANELS OF STAINED OR OTHER GLASS OR OTHER TRANSPARENT MATERIAL FOR SASHES, CASEMENTS, LAMPS, &c.: *C. F. Gray.*—The joints, grooves, or framework are made so that some of the glass lights shall assume a raised form and project beyond the panel's or pane's level surface, thereby forming and building out facets, pyramids, and prisms, and giving a greater reflection or radiation of light.

29,728.—SUBSTITUTE FOR LINSEED OIL BODY FOR PAINT, FLOOR-CLOTH MAKING, &c.: *S. Banner.*—The compound essentially consists in colophony dissolved in a solvent and saponified, in whole or in part, with caustic or silicated soda or potash, or both; instead of colophony the inventor may use a compound thereof with hydrate of lime, as in his Patent No. 11,805, of 1887. The quantities which he finds to be good are 100 parts of colophony, or its compound with lime, and about 18 of caustic soda, with solvent enough to render the admixture more or less fluid.

30,285.—VENTILATORS: *J. Cousland.*—The ventilator, which has the usual shaft and outer casing with openings, contains angled baffle plates (arranged concentrically within and opposite each opening), whose edges are curved out slightly to deflect the air currents and increase their speed over the openings. Within the baffles, and opposite the openings left between them, are arranged vertical deflecting plates, which extend upwards from the shaft to the top of the ventilator, and prevent the air currents from striking one another, whilst directing them through the outlets. The latter plates project outwards at right angles from the shaft's circumference, and towards the openings between the baffle plates.

[1898.] 170.—A SOLID CORRUGATED DOOR-BOLT PLATE: *G. & H. G. Carter.*—For strong and cheap door-bolt plates is contrived a corrugated plate wherein the sockets are stamped from the plate itself to form a channel in which the bolt may slide, instead of the usual method of forming the sockets separately from and rivetted on to a plate or making them of pieces lapped round to form the sockets.

4,884.—WASHABLE DISTEMPER: *F. C. Goddard.*—Whiting soaked in water and made into a thick pulp, or any colour ground in water, or a mixture of these, is stirred with one-eighth part of beeswax dissolved in turpentine, being warmed to promote amalgamation, when the distemper is required for use, a small quantity of water-size should be added.

14,565.—VENEERS: *H. F. D. Wibrow & J. Paul.*—For producing veneers of various designs such as "Maser veneers" from knotty or curled woods, veneers forming a pattern, or shaded design, and so on. A number, say from twenty to twenty-five, of veneers are glued together, and then placed between two blocks or dies, the body being kept in a pliable or yielding condition by steam, the application of strong pressure to the dies makes the veneers take the shape of the dies; whey dry the body is cut in a veneer sawing-machine, and the line of cut, traversing various layers, will produce marked veneering-plates.

17,141.—CLOISONNÉ WORK AND MOSAICS: *T. Pfister.*—The claim is for the method of forming the outline of the designs by marking them out with adhesive material, and sprinkling broken particles of glass or other mineral matter on the adhesive material; when the adhesive material is dry the superfluous particles are brushed away, and the design is then permanently outlined in non-tarnishable materials; by another method the outlines of the design are made with beads threaded on wires or fibrous threads.

19,422.—SURVEYING INSTRUMENT FOR DELINEATING THE PROFILE OF THE GROUND: *P. Weber.*—The principle upon which the instrument is based is that so long as the profile of the path is level the marker will make a straight mark or a series of small perforations on the paper, which is withdrawn from the reel at a rate depending upon the speed at which the carriage is driven; but as soon as the profile changes, either up or down, the pendulum will cause the marker to be deflected by a greater or less amount from the position shown, and the marker will travel across the paper at an angle, the amount depending upon the pendulum's deflection; as soon as the carriage attains a level path the pendulum sets the marker straight again, but so long as the carriage maintains its present elevation the marker will keep its distance from the centre line of the starting point; it is only after the carriage has gone down an incline corresponding to the one it ascended that the marker will return to the line of its first position.

20,428.—WINDOW SASH FASTENINGS: *E. Johnstone & E. S. Ross.*—The inventors employ a bolt sliding in a framing attached to the lower sash's meeting rail, and a handle or knob to actuate the bolt, so that when the handle is pushed forwards the bolt advances until its end enters a keeper on the upper sash's meeting rail, whilst a pawl or catch then automatically enters a notch in the bolt and locks it in its forward position; for unlocking, the handle must first be depressed and then pulled backwards, thus the pawl is released, and the bolt can be withdrawn.

NEW APPLICATIONS.

November 14-19.

29,313, J. C. Jones and Others, Gate Hinges. 23,922, Lord & Miller, Fire Alarms or Boxes for Electrical Signalling. 23,923, J. Hathway, Corrugated Iron or Steel Roofing. 23,930, Dutton & Brearley, Guard for Wood Planing Machines. 23,931, H. O. Bennett and Others, Closet Seat and Lavatory Brackets, &c. 23,932, Kay & Butler, Valve Taps for Hot Water, &c. 23,939, C. D. Bevan, Slide Bevels. 23,943, G. Raper, Composition for Making Moulded Articles. 23,944, Burtons, Potter's Dipping Machine. 23,954-5, Rhodes & Gaunt, Flushing Cistern Valves and Flushing Apparatus. 23,958, E. Thomson, Electrical Measuring Instruments. 23,961, H. Cohn, Means for Testing the Light in Working Places, Studios, Schools, &c. 23,963, H. Christensen, Permanent Roofing. 23,966, F. B. Gilbreth, Mixer for Concrete, Cement, &c. 23,967, J. H. Bastable, Safety Lamp. 23,976, P. L. Guyenot, Electrically Controlled Taps or Cocks. 23,979, J. Smith, Smoke Consumers and Back-pressure Reducers. 23,982, H. Fullwood, Mine Ventilation. 23,990, E. Gessner, Fire Grates. 24,023, J. Pohl, jun., Boring and Drilling Machines. 24,028, W. Walker, Air Propellers and Exhausters. 24,030, H. Richardson, Weighing Apparatus and Electrical Weighing Machines. 24,038, Brown & Pruce, "Panic" and other Bolts. 24,053, J. M. Murphy, Roadway Structures for Electrical Railways. 24,071, McCall's Sliding Hinge Window Company and McCall, Windows. 24,078, J. J. McClelland, Sand Moulding Machine. 24,086, Laffan & Bury, Production of Marbled or Painted Surfaces on Glass, &c. 24,089, H. T. Abel, Marking Gauges for Joiners, &c. 24,095, M. Barry, Water-pipes, &c., for Use in Exposed Situations. 24,101, A. Ihn, Copying Devices for Drawings, Documents, &c. 24,107, C. F. Hanington, Mechanical Door Checks. 24,109-10, B. Berry, Wood-block Parquetry and Similar Flooring, and a Staple. 24,112, D. D. Esson, Apparatus for Recording Road and other Ground Levels and Distances. 24,115, C. Schmidlin, Electricity Meter. 24,133, Hirst & Bevis, and 24,466, W. N. Stewart, Electrical Arc Lamps. 24,145, E. O. Puddephatt, Raising, Lowering, Traversing, and Transporting Loads. 24,151, Brassingtons, Ventilators for Buildings, &c. 24,159, H. David, jun., "Window Frame, with secret hung Sash." 24,180, J. Tourtel and others, Coin-freed Prepayment Meters. 24,188, Villaret & Wahlen, Drying and Transporting Devices for Bricks, &c. 24,190, W. M. Scott, Circuit Breaker. 24,204, Rateau & S. Harte & Co., Steam Turbines. 24,211, East Ferry-road Engineering Works Company and Others, Drying White Lead. 24,217, F. Soeding, a Gouge. 24,225, Annie Cork, Self-adjusting Cooking Steamer. 24,231, E. S. Griffith, Vapour Generating and Heating Apparatus. 24,238, Lent & Whitehead, Vices. 24,249, Bradby & Bidwill, Lead Tack for Soil, Ventilating, and Water Pipes. 24,250, W. Wright, "Exhaust Pipe Top for Steam, Air, or Gas, Noise Preventer and Grease Separator for Exhaust Pipes without Back Pressure." 24,260, J. Fliegel, Clamping hollow bodies of Glass or Ceramic Products, &c., to be treated in grinding or other Machinery. 24,262, G. H. Noakes, Portable Endless-Chain Telescopic Elevator. 24,270, Lundbergs, Multiple Wall-Connexions for Electrical Lighting. 24,273, K. Bauer and Others, Lathe Chucks. 24,281, D. Janzi, Cement Step. 24,285, United Asbestos Company & Fisher, Fireproof Ceilings and Partitions. 24,293, J. Goodson, Gas Governors. 24,294, R. Bennett, Manufacture of Tiles, Bricks, &c. 24,302, C. Reinke, Machine for Moulding Cores, &c. 24,306, A. Foster, Circular-Saw Guards and Shields. 24,328, F. Denison, Sanitary Channel Block. 24,329, H. Rottenburg, Fence or Gauge for Use with Fret Saws, Band Saws, and Circular Saws. 24,334, E. Taylor, Appliances for Consuming Smoke and Economising Fuel. 24,346, Rose & Hall, Extensible Ladders. 24,351, T. Archer, Domestic Fire-Guards and Spark-Arresters. 24,367, Mrs. Charles Jackson, Vermin-Trap. 24,371, C. P. Steinmetz, Alternating Electrical Current Motors and Distributing Systems. 24,378, E. W. Engels, Fire and Acid Proof Materials. 24,379, F. L. Muirhead, Telephones. 24,381, J. Hiscock, Sliding-windows. 24,401, W. T. Hagger, Oil Lamps. 24,404, L. Hackethal, Insulating and Equalising Electrical Currents. 24,405, A. Mauser, Hinges for Doors, French Windows &c. 24,406, W. S. Worthington, Taps or Cocks. 24,415, E. J. Plymsell, Burglar and Similar Alarms. 24,417-8, W. Langdon-Davies, Induction Motors, and Alternating Cur-

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised	Premiums.	Designs to be delivered.
*Fire Brigade Station	Bradford Corp.	100*l.*, 50*l.*, and 30*l.*	Feb. 1

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Additions to School, Rosebery-street	Loughborough S.B.	Barrowcliff & Co. Mill-st. Loughborough	Dec. 6
Villa, Station-road, Keith, N.B.	.....	G. Sutherland, Archt. Elgin	do.
Completion of Kent College, Canterbury	.....	C. Bell, Archt. 3, Salters' Hall Court, E.C.	do.
Four Houses, Horsforth-avenue, Bridlington Quay	J. Slater	J. Earnshaw, Archt. Bridlington Quay	do.
*Underground Sanitary Convenience	Hammersmith Vestry	H. Mair, Town Hall, Hammersmith	Dec. 7
Gate and Piers, Kyletaun	Rathkeale (Ireland) Union	T. B. Naughton, Union Offices, Rathkeale	do.
School, Caegarw, Mountain Ash, Glam.	Llanwonno Sch. Bd.	T. W. Millar, Archt. Oxford-st. Mountain Ash	do.
Labour Shed	Dorking Union	Bargman & Benison, Archt. 76, South-st. Dorking	Dec. 8
Warehouse, Parkmors Distillery, Dufftown	.....	C. C. Doig, Archt. Elgin	do.
Hotel, Great Grimsby	J. H. Alcock	Croft & Bentley, Archt. 21, Osborne-street, Great Grimsby	do.
Additions to 5, Burlington-terrace	L. Noblet	J. Earnshaw, Archt. Wellington-rd. Bridlington Quay	do.
Chapel, Road, &c. at Cemetery	Rainham (Essex) P.C.	C. J. Dawson, Archt. Barking	do.
Villa, Elgin	.....	C. C. Doig, Archt. Elgin	Dec. 9
Pair Villas, Ovenden, Yorks.	.....	M. Hall, Archt. 29, Northgate, Halifax	do.
Additions, &c. to Police Station, Maesteg	Glamorgan Standing Joint Committee	T. M. Franklen, County Offices, Cardiff	Dec. 10
Alterations to No. 5, West View-terrace, Morecambe	.....	A. L. Long, Archt. 12A, Pedder-st. Morecambe	do.
Hotel, Newmarket	Star Brewery Co. Ltd.	Barber & Son, Archt. 22, Buckingham-street, Adelphi, W.C.	do.
Bowl House and Pavilion, Patricroft, Lancs.	Eccles Corp.	Borough Surveyor, Town Hall	Dec. 12
Engine House, &c. Henderson-row	Edinburgh Corp.	Colam & Cooper, Engr. 1, Parliament-sq. Edinburgh	do.
"Nazareth" House, Lancaster	.....	Austin & Paley, Archt. Castle Hill, Lancaster	do.
Additions to Girton College, Cambridge	.....	A. Waterhouse & Son, Archt. 20, New Cavendish-street, W.	do.
Seven Houses, Furze-st. Carlisle	.....	Johnstone Bros. Archt. 39, Lowther-st. Carlisle	do.
Electricity Buildings, Beckett-sq.	Barnsley Corp.	J. H. Taylor, C.E. St. Mary's-place, Barnsley	do.
*Eighty-three Cottages	Barking Town U.D.C.	C. J. Dawson, East-street, Barking	Dec. 13
*Road-making, Sewers, Drains, Fencing, &c.	Willesden D.C.	O. Claude Robson, Public Offices, Dyne-rd. Kilburn	do.
*Public Baths, Plaistow	Cty. Boro. of West Ham	A. Saxon Snell, 22, Southampton-bldgs. W.C.	do.
*Kerbing, Tar Paving, Channelling, &c.	Lewisham B. of W.	Surveyor's Dept. Board's Offices, Catford, S.E.	do.
*Alterations Coroner's Court	Fulham Vestry	C. Botterill, Town Hall, Fulham, S.W.	Dec. 14

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Granite Spalls	Twickenham U.D.C.	F. W. Pearce, Town Hall, Twickenham	Dec. 14
Additions, Wesleyan Chapel, Mousehole, Penzance	.....	H. W. Coltins, Archt. Penryn-st. Redruth	Dec. 15
*Bath-room, Lobby, &c. at Workhouse	St. Olave's Union	Newman & Newman, 31, Tooley-street, S.E.	do.
*Removal of Slop	Hampstead Vestry	Surveyor, Vestry Hall	do.
Additions to Grammar School, Crossstreet	Preston Corp.	Borough Surveyor, Town Hall	Dec. 16
Alterations to Cattle Stage, Brook-st. North	do.	do.	do.
*Joiners, Plumbers, Plasterers, Slaters and Glaziers' Work at Hotel, Edinburgh	Caledonian Ry. Co.	Pieddie & Washington Browne, 8, Albyn-place, Edinburgh	Dec. 17
*Additions to Infant School	Station Schools Hampton-on-Thames Managers	F. G. Hughes, Hampton-on-Thames	Dec. 19
*Infants School	Edmonton S.B.	H. W. Dobb, 110, London-wall, E.C.	Dec. 20
*Extension of Patent Office	Comrs. H.M. Works	Office, Storey's Gate, S.W.	Dec. 21
Repairing Guildhall	Dartmouth T.C.	T. O. Veale, Boro. Sur. Town Hall	Dec. 24
Police Buildings, Blaenau Festiniog	.....	T. T. Rees, Archt. Hamilton-chambers, Birkenhead	Dec. 27
*Additions, &c. to Asylum at Burghill	Hereford Cnty. Asylum	Giles, Gough & Trollope, 28, Craven-street, W.C.	Dec. 28
*Rearranging Drainage at Asylum	Suffolk County Asylum	A. T. Cobbold, County Hall, Ipswich	Dec. 31
*Superstructure of Workhouse	Nottingham Guardians	A. Marshall, King-street, Nottingham	Jan. 3
*Enlarging Hospital, Plaistow	Cty. Boro. of West Ham	E. T. Hall, 57, Moorgate-street, E.C.	Jan. 7
Cottage, Horsforth, near Leeds	.....	H. & E. Marten, Archt. Charles-street, Bradford	No date
Additions to Imperial Hotel, Hull	.....	Walker & Dosser, Archt. 2, Manor-st. Hull	do.
Hotel, Mallaig, N.B.	.....	Dun Cameron, Archt. Inverness	do.
Eight Houses, Meanwood-rd. Leeds	.....	P. Robinson, Archt. 72, Albion-st. Leeds	do.
*Electric Lighting Station	Buxton U.D.C.	W. R. Bryden, 1, George-street, Buxton	do.
Laundry at Workhouse	Middlesbrough Union	Lofthouse & Sons Archt. 62, Albert-rd. Middlesbrough	do.
Six Houses, Aireville-rd. Frizinghall	.....	J. Jackson, Archt. Barry-st. Bradford	do.
Baths, Lounge, &c. Llandrindod Wells	T. Heighway	Swash & Bain, Archt. Newport, Mon.	do.
Alterations, &c. No. 16, Station-road, Llanelly	.....	W. Griffiths, Archt. Falcon-chambers, Llanelly	do.
Walls, Chapel, &c.	Burtonwood P.C.	W. & S. Owen, Archt. Warrington	do.
Presbyterian Church, Roath, Cardiff	.....	Habershon & Co. Archt. Pearl-at. Cardiff	do.
Chapel, Blaengarw, nr. Bridgend	.....	J. D. Salathiel, Blaengarw	do.
Six Houses, Dogsthorpe, Peterborough	Mr. Frank	J. G. Stallebrass, Archt. North-st. Peterborough	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Superintendent Sewage Works	Guildford Corp.	.....	Dec. 10
*Measuring Clerk	London C.C.	130*l.* per an. to commence	do.

Those marked with an asterisk (*) are advertised in this Number. ***Competition,*** p. iv. ***Contracts, pp.*** iv. vi. viii. & xxi. ***Public Appointments, pp.*** xix. & xxi.

rent Motors. 24,423, A. Chadwick, Window Fasteners. 24,425, H. Lutz, Combined Electrical Wire Gauges and Calculating Devices. 24,463, H. Hentschel, Stoves. 24,469, J. H. Goodwin, Pulleys. 24,474, F. Badeau, Sifting Machines. 24,475, K. Kreuzer, Method and Means of Splitting Stones. 24,480, C. W. H. Bathurst, Rain-water or Roof Drain Pipes, Sockets, &c. 24,485, G. Wiberg, Controlling Cock.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

November 15.—By JOHN DAVIES.

Bethnal Green.—Old Bethnal Green-rd., &c., f.g.r. 13*l.* 7s., reversion in 5¼ yrs. £1,950
Clapton.—22 to 34 (even), Walsingham-rd., f., r. 202*l.* 3,165
Dalston.—2, Graham-rd., e.r. 50*l.*; also l.g.r. 15*l.* 18s., u.t. 53 yrs., g.r. 12*l.* 630
Hackney.—71, 73, and 75, Wellington-rd., u.t. 12½ yrs., g.r. 6*l.*, r. 84*l.* 370

By G. PEARCE & SONS.

Hoxton.—14, Baring-st., u.t. 34 yrs., g.r. 4*l.* 5s. ... 260
Stoke Newington.—55, Cowper-rd., u.t. 51 yrs., g.r. 4*l.* 275
City-rd.—9 and 10, Coombs-st., u.t. 25½ yrs., g.r. 9*l.* 5s., r. 64*l.* 445
Islington.—34, Shepperton-rd., u.t. 55 yrs., g.r. 8*l.*, r. 42*l.* 335

By SEGRAVE, BROWETT & TAYLOR.

Islington.—353 to 371 (odd) and 371a, Essex-rd., u.t. 47½ yrs., g.r. 84*l.*, r. 476*l.* 4,410
Camden Town.—1, Murray-st., u.t. 45½ yrs., g.r. 10*l.*, r. 65*l.* 550
St. Luke's.—5, New Charles-st., u.t. 43½ yrs., g.r. 6*l.*, e.r. 40*l.* 295
Camberwell.—Lothian-rd., f.g.r. 22*l.*, reversion in 61 yrs. 665
Bayswater.—12, Westbourne Grove-ter., f., r. 70*l.* 1,660

By BUCKLAND & SONS (at Masons' Hall Tavern).

Slough, Bucks.—Mackenzie-st., "Vallis' Royal Hotel," with five cottages and three plots of land adjoining, f., with goodwill 20,000

By S. H. BAKER (at Masons' Hall Tavern).

Coulsdon, Surrey.—"The Red Lion" p.-h., u.t. 40 yrs., r. 90*l.*, with goodwill 5,750

By W. ROLFE (at Masons' Hall Tavern).

Blackheath.—Lee-rd., "The Railway Hotel," u.t. 51 yrs., g.r. 20*l.*, with goodwill 21,800
Hackney.—West-st., "The General Havelock" p.h., f.g.r. 27*l.*, reversion in 62 yrs. 940

By C. RAWLEY CROSS & CO. (at Uxbridge-rd.).

Kensington.—33 to 43 (odd) and 42 and 44, Wharton-rd., u.t. 97½ yrs., g.r. 66*l.*, r. 549*l.* 12s. .. £3,393

By FRANKLIN HOMAN (at Rochester).

Birling, Kent.—Ham Mill Farm, 15 a. 1 r. 17 p., f. 600
East Malling, Kent.—Enclosure of meadow land, 21 a. 1 r. 17 p., f. 290

November 16.—By DOUGLAS YOUNG & CO.

Bayswater.—Chepstow-pl., Chepstow Mansions, u.t. 95 yrs., g.r. 1,100*l.*, e.r. 4,170*l.* 22,250
Holloway.—Holloway-rd., &c., a corner building site, area 8,238 ft., f. 5,000

By HAROLD GRIFFIN.

Battersea.—126, Ingrave-st., u.t. 76 yrs., g.r. 5*l.* ..
Clapham.—36, Osborne-ter., u.t. 29½ yrs., g.r. 7*l.* 10s., r. 42*l.* 330

By SEGRAVE, BROWETT, & TAYLOR.

Hampstead.—39 to 47 (odd), Stanley Gardens, u.t. 64½ yrs., g.r. 1*l.* 5s., r. 345*l.* 3,840
49 to 57 (odd), Stanley Gardens, u.t. 64½ yrs., g.r. 50*l.*, r. 370*l.* 3,415
Haverstock Hill.—16 Park Hill-rd., u.t. 51½ yrs., g.r. 12*l.*, r. 65*l.* 600
Kentish Town.—96 and 98, Prince of Wales'-rd., r. 93*l.*; also l.g.r. 15*l.*, u.t. 41 yrs., g.r. 13*l.* .. 1,120
Kilburn.—181, Loveridge-rd., u.t. 79 yrs., g.r. 7*l.* 10s., r. 50*l.* 450
15 and 15A, High-rd., u.t. 60 yrs., g.r. 2*l.*, r. 120*l.* 1,305
High-rd., i.g.r. 55*l.*, u.t. 60 yrs., g.r. 5*l.* 885
St. John's Wood.—7, Norfolk-rd., u.t. 36 yrs., g.r. 14*l.* 2s., r. 65*l.* 485
Bayswater.—9, Westbourne-gdns., u.t. 50½ yrs., g.r. 15*l.*, e.r. 80*l.* 540
62, Richmond-rd., u.t. 47½ yrs., g.r. 8*l.*, r. 50*l.* .. 455
19 and 20, Alexander-st., u.t. 50½ yrs., g.r. 18*l.*, r. 140*l.* 1,095
4 and 5, Alexander-mews, u.t. 50½ yrs., g.r. 10*l.*, r. 52*l.* 425
Maida Vale.—31 and 33, Clifton-gdns., u.t. 50 yrs., g.r. 14*l.* 1,335

By KING & KING (at Portsmouth).

Wymering, &c., Hants.—Little Gatcombe Farm, 52 a., f. 11,000
Portsea, Hants.—A plot of copyhold land 155
Southsea, Hants.—1, Stanley-lane, f. 500

November 17.—By FULLER, HORSEY, SONS, & CASSELL.

Rotherhithe.—Odessa-st., a plot of land, area 5,455 ft., f. 270

By H. J. BLISS & SONS.

Hackney.—1, London Fields West, with slaughter house, &c., f., r. 35*l.* 660
Hoxton.—261 and 263, High.st., f., r. 72*l.* 1,665
Dalston.—210, Richmond-rd., f., r. 50*l.* £980
Richmond-rd., a freehold mission hall, r. 35*l.* .. 725
Dalston.—29, Myrtle-st., u.t. 41½ yrs., g.r. 3*l.*, r. 28*l.* 310
Victoria Pk.—136, Grove-rd., u.t. 45 yrs., g.r. 4*l.*, e.r. 36*l.* 380
Hornsey.—16 to 24 (even), Boyton-rd., f. 1,305

By JOHN A. JONES.

Notting Hill.—105, Ladbroke-grove, f., r. 100*l.* .. 1,800

By NEWBON, EDWARDS, & SHEPHARD.

Euston-rd.—102 to 112 (even), Aldenham-st., f. .. 1,940
29 to 53, Little Clarendon-st., f. 7,995
54, Little Clarendon-st., and 34 and 35, Johnson-st., f. 850

By PROTHEROE & MORRIS.

Catford.—163, 165, 167, 169, and 171, Rushey Green, with six cottages and land adjoining, f., r. 165*l.* 4,550
Rushey Green, Whitehouse Dairy and 2 a., fr., r. 44*l.* 1,200
Forest Hill.—Queen's-rd., f.g.r. 25*l.*, reversion in 83 yrs. 780
Queen's-rd., two plots of building land, f. 710
Queen's-rd., f.g.r. 24*l.*, reversion in 69 yrs. 700
27 and 29, London-rd., f. 1,400
Leigh-on-Sea, Essex.—London-rd., six plots of building land, f. 170
Westleigh-av., six plots of building land, f. 135
Southend-on-Sea, Essex.—Fairfax-drive, four plots of land, f. 104

By JOSEPH STOWER.

Paddington.—19, Delamere-cres., u.t. 52 yrs., g.r. 8*l.*, e.r. 60*l.* 415
Bloomsbury.—16, Hunter-st., u.t. 11 yrs., g.r. 26*l.* 5s., r. 78*l.* 15s. 160
40, Hunter-st., u.t. 7¼ yrs., g.r. 21*l.* 140

By DOUGLAS YOUNG & CO. (at St. Albans).

St. Albans, Herts.—24 and 26, College-st., with a factory in rear, f., e.r. 60*l.* 750

November 18.—By HARDS & BRADLY.

Peckham.—175, Cator-st., f. 405
Greenwich.—61 and 63, Woolwich-rd., u.t. 58 yrs., g.r. 9*l.* 635

By A. J. SHEFFIELD.

Poplar.—4 to 12 (even), Bloomfield-st., u.t. 66½ yrs., g.r. 12*l.* 800

***Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.**

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G. ton	8/0/0	0/0/0
Teak, E.I....load	10/10/0	15/10/0
Sequoia, U.S.ft.cu.	1/9/0	2/3/0
Ash, Canada, load	3/15/0	5/0/0
Birch, do.....	3/10/0	5/10/0
Elm, do.....	4/10/0	5/10/0
Fir, Dantsic, &c..	2/15/0	4/15/0
Oak, do.....	2/9/6	4/2/6
Canada	4/2/6	6/6/0
Pine, Canada red	0/0/0	0/0/0
Do. yellow	4/2/6	6/0/0
Lath, Dantsic, fath	4/10/0	5/10/0
St. Petersburg..	4/0/0	8/10/0
Wainscot, Riga, &c., log.....	4/15/0	6/5/0
Odessa, crown....	4/15/0	6/5/0
Deals, Finland 2nd & 1st std 100	9/5/0	9/15/0
Do. 4th & 3rd ..	9/5/0	9/15/0
Do. Riga	7/15/0	8/15/0
St. Petersburg, 1st yellow	11/5/0	13/15/0
Do. 2nd yellow.	10/5/0	11/15/0
Do. white.....	9/5/0	11/5/0
Swedish	9/5/0	16/5/0
White Sea	10/5/0	17/10/0
Canada, Pine 1st	18/0/0	24/10/0
Do. do. 2nd	13/0/0	16/10/0
Do. do. 3rd, &c.	6/0/0	9/10/0
Do. Spruce, 1st	8/10/0	10/10/0
Do. do. 3rd and 2nd	7/0/0	8/10/0
New Brunswick	7/0/0	8/0/0
Battens all kinds	5/0/0	16/0/0
Flooring boards, sq., 1 in. prep. 1st.....	9/0	16/3
Do. 2nd	8/3	13/0
Other qualities—	6/6	7/0
Cedar, Cuba, ft.	/4	/4½
Honduras, &c.	/3¾	/4½
Mahogany, Cuba	/5½	/7
St. Domingo, cargo av.	/5	0/1/3
Mexican, do. do.	/3½	/4
Tobasco, do. do.	/4	/6½
Honduras, do.	/4	/6
Box, Turkey, ton	4/0/0	15/0/0
Rose, Rio	7/0/0	14/0/0
Bahia	6/0 0	12/0/0
Satin St. Doming.	0/0/5	0/1/0

TIMBER *(continued)*.		
Satin, Porto Rico	0/0/9	0/2/0
Walnut, Italian ..	0/0/3	0/0/7
METALS.		
Iron—Pig, in Scotland .....ton	2/9/7½	0/0/0
Bar, Welsh, in London	6/0/0	6/5/0
Do. do. at works in Wales	5/15/0	5/17/6
Do. Staffordshire, in London.....	6/5/0	7/10/0
COPPER — British cake and ingot	60/0/0	62/10/0
Best selected ..	60/10/0	61/0/0
Sheets, strong..	64/10/0	66/0/0
Chili bars	56/10/0	0/0/0
YELLOW M. L. lb.	5d.	5⅝d
LEAD — Pig Spanish ....ton	13/12/0	0/0/0
English com. bands	13/15/0	0/0/0
Sheet, English 6 lbs. per sq. ft. and upwards ..	14/15/0	0/0/0
Pipe.....	15/5/0	0/0/0
ZINC — English sheet.....ton	18 0/0	0/0/0
Vieille Montagne	29/15/0	0/0/0
Spelter	24/0/0	24/5/0
TIN—Straits	83/12/6	0/0/0
Australian.....	84/2,6	84/12/6
English Ingots..	86/0/0	87/0/0
Banca	0/0/0	0/0/0
Billiton	0/0/0	0/0/0
OILS.		
Linseed .....ton	16/12/0	0/0/0
Cocoanut, Cochin	27/15/0	0/0/0
Do. Ceylon	24/10/0	0/0/0
Palm, Lagos	21/15/0	0/0/0
Rapeseed, English pale	23/0/0	0/0/0
Do. Brown	21/10/0	0/0/0
Cottonseed ref. ..	15/0/0	16/0/0
Oleine.....	17/0/0	18/0/0
Lubricating U.S.	0/5/3	0/7/6
Do. Black	0/5/0	0/6/6
TAR — Stockholm barrel	1/5/0	0/0/0
Archangel.....	0/18/0	0/0/0
Turpentine	28/10/0	0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100 unless in some exceptional cases and for special reasons.]

ABERTILLERY.—For making a road (2 miles) to 'Aberbeeg, and for widening the main road from Aberbeeg to Crumlin (2½ miles) for the Urban District Council. Mr. J. McBean, engineer, 1, King-street, Abertillery. Quantities by engineer:—

Preece	£18,349	4	11
Wm. Brown	17,467	7	3
Meredith.....	16,158	1	9
Mainwaring & Davies	15,687	2	0
Willis.....	15,438	16	3
Noel Bagley	£14,347	18	5
Howells	14,275	0	2
Lewis	13,713	8	8
Monks & Parfitt, Newport, Mon.*	12,313	19	10

* Accepted.

ANNFIELD PLAIN (Durham).—For making a road, &c., Victoria-terrace, for the Urban District Council. Mr. T. J. Trowsdale, Surveyor, Council's offices, Annfield Plain:—

D. Champney	£738	8	11
G. H. Bell	656	12	2
R. Goldsborough ...	588	15	10
T. Collinson	584	4	3½
C. Smith	580	14	2
T. Galero	£546	7	6
A. Stephenson	526	0	7
J. Dunn, Annfield Plain (accepted) .	464	5	10

BRIDLINGTON QUAY.—For erecting a chalet and pair of villas, for Messrs. Whitaker Bros., Bridlington Quay. Mr. W. S. Walker, architect, Bridlington Quay:—

	Chalet.	Pair of villas.
E. Corner	—	£1,360
T. Blackburn	£879 5	1,200
S. Booth	—	1,140
W. Barnes	—	1,105
J. Taylor	796 16	1,025

BRIDLINGTON QUAY.—Accepted for additions to Londesborough Houses, Promenade, for Dr. Wetwan. Mr. S. Dyer, architect, Quay-road, Bridlington Quay:—
Edward Corner, New Burlington-road, Bridlington Quay £365

CARDIFF.—For the erection of a fish market, &c., The Hayes, for the Corporation. Mr. W. Harpur, Borough Engineer, Town Hall, Cardiff:—

Geo. Griffiths.....£15,058	19	8	
H. Gibbon	14,937	12	10
Chubb & Co.....	14,598	4	9
J. Thomas	14,303	0	0
Powell & Mansfield	14,325	4	6
Latty & Co.	14,140	0	0
Shepton & Sons ..£13,941	13	0	
W. Thomas & Co.	13,786	0	0
Evans Bros.....	13,739	15	10
James Allan	13,698	13	9
W. T. Symonds....	13,454	0	0
Rees & Thomas ..	13,285	0	0
Turner & Sons*....	12,988	0	0

[All of Cardiff.]
* Accepted.

CLACTON-ON-SEA.—Accepted for the erection of a villa, for Mr. A. E. Briscoe. Mr. G. Gardiner, architect, Clacton-on-Sea:—
Chambers & Co., Clacton-on-Sea.....£870 10
[Architect's estimate, £865.]

DOVER.—For the supply of 1,500 tons Guernsey granite, for the Town Council. Mr. E. Wellaston Knocker, Surveyor, Castle Hill House, Dover:—

	At per ton, Broken Granite Siftings.		At per lineal foot. Radiated Kerb.		Chan-nelling.	Radiated Channeling.
	s. d.	s. d.	s. d.	s.	s. d.	s. d.
Fry Bros., Greenwich	11 9	8 9	8 9 ..	2	2 3	2 6 2 10

DOVER.—Accepted for the erection of house and shop, Cherry Tree-avenue, for Miss M. A. Richards:—
A. J. Dawkins.....£178 15

DUDLEY.—For sewering Scott's Green and Stourbridge-road, for the Corporation. Mr. J. Gammage, Borough Surveyor, Town Hall, Dudley:—

John Mackay.....	£440	0	
John Davies	419	3	
H. Hughes & Son	£350	0	

[Borough Surveyor's estimate, £405]

EASTHAM (Cheshire).—Accepted for the erection of a pair of residences in Plymyard Park, for Mr. C. F. Werner. Mr. Ernest G. Davies, architect, 6, St. John-street, Hereford:—
W. Seldon & Co.....£1,550

ELGIN.—For the erection of a church, Rothes. Mr. G. Sutherland, architect, 51, High-street, Elgin:—
Masonry.—D. Forsyth, Elgin.....
Carpentry—A. Robb, Rothes ... .
Plastering.—Logie & Green, Fochabers.....
Plumbing.—Ross Bros., Dufftown .....
Slating.—J. Wilson, Dufftown .....
Painting.—J. James, Elgin.....
Heating.—R. Tyndall, Aberdeen.....
£2,100

GORDONSBURGH, N.B.—For the erection of a house, &c. Mr. J. Perry, architect, Buckie:—

Masonry.—A. Milne, Buckie	£135	0	0
Carpentry.—A. Murray, Admiralty-street, Buckie	70	19	6
Slating.—J. Barclay, East Church-street, Buckie	21	19	0
Plumbing.—J. & T. Campbell, Cluny Ice, Buckie	17	10	0
Plastering.—J. Ingram, Cullen	13	19	6
Painting.—A. Symon & Son, Cluny Ice, Buckie	5	17	6

HALTWHISTLE.—For the erection of the "Mechanics'" Institute. Messrs. Oliver & Dodgshun, architects, Carlisle:—
J. Watson, Haltwhistle (exclusive of heating) ..£1,506 10 6

HEREFORD.—Accepted for the erection of a pair of villas in Ryeland-street, Hereford. Mr. Ernest G. Davies, architect, 6, St. John-street, Hereford:—
J. Mason, Hereford.....£600

HEREFORD.—Accepted for the erection of two pairs of villas in Westfaling-street. Mr. Ernest G. Davies, architect, 6, St. John-street, Hereford:—
J. Mason, Hereford.....£1,000

HITCHIN.—For the erection of a Town Hall, &c., for the Urban District Council. Messrs. W. Mountford and G. Lucas, architects, 17, Buckingham-street, Strand, London, W.C.:—

Howard	£6,998	0	0	Willmott	£6,487	0 0
Warren	6,920	0	0	Menides.....	6,364	0 0
French	6 874	16	11	Foster.....	6,150	0 0
Coleman.....	6,543	0	0	Redhouse*	5,814	0 0

* Accepted subject to redactions.

LEOMINSTER.—For the erection of cottage hospital in South-street, for the Hospital Trustees. Mr. Ernest G. Davies, architect, 6, St. John-street, Hereford. Quantities by the architect:—

Page & Son	£1,825	T. Holland	£1,412
J. J. Davies	1,769	I. Watkins*	1,395
J. Morgan'.....	1,698	C. Edwards	1,350
W. C. Taylor	1.494		

* Accepted subject to slight alterations—reduced to £1,320.

LISS (Hants).—For the erection of a residence in the Forest. Mr. H. T. Keates, architect, Petersfield:—

A. Etherington.....£2,750	10	Pocock Bros. £1,336	0
W. Mould	1,427 0	W. Jenkins, Liss*	1,303 0

* Accepted.

LITTLE BIRCH (Hereford).—Accepted for alterations and additions to house, for Mr. Evans. Mr. Ernest G. Davies, architect, 6, St. John-street, Hereford:—
W. C. Taylor, Ross.....£250

LONDON.—For additions to Factory, 175 to 189, Hackney-road, N.E., for Messrs. Masters Bros. Mr. Alfred J. Martin, architect, 386, Old-street, E.C. Quantities supplied:—

Brown & Harris.....£2,395		Todd & Co. £1,627	
Woodward & Co.	1,783	Goodall	1,625
Killby & Gayford	1,764	Jarvis & Sons	1,466
Chessum & Sons	1,729		

LONDON.—For decorations and sanitary work at Mount-grove, Greenhill-road, Hampstead, N.W., for the Rev. A. J. Harvey. Mr. Harvey Dyball, architect, 35, Bucklersbury, E.C.:—

Howard & Son £2,151	4	9	R. A. Lowe £1,727 0 0
Whitby, Slater, & Whitby	1,760	0 0	Lole & Lightfoot .. 1,669 0 0
Burford & Son	1,755	0 0	H. Hanks..... 1,471 10 0

LONDON.—For the erection of a small addition to Grove House, 92, Addison-road, Kensington, W., for Mr. John Girdwood. Mr. Walter J. Ebbetts, architect and surveyor, Savoy House, 115, Strand, W.C.:—

J. M. Macey & Sons £999	0	Campbell, Smith & Co...£294	0
R. A. Yerbury & Sons .. 995	0	J. J. Rayment & Son....	289 18

LONDON.—Accepted for the erection of public baths, Whitehorse-street, Ratcliff, E.:—
C. Yates & Co., 106, Campbell-road, Bow.....£3,550

LONDON.—For the rebuilding of house and shop at Nos. 251 and 253, Old-street, for Messrs. Kruzin Bros. Messrs. William Eve & Sons, architects:—

Perry .....A.....£857		Carmichael £756	
Salt.....	820	J. H. Johnson	747
Kilby & Gayford	792	Chessman	729
W. Harris.....	756	E. Houghton & Son*	624

* Accepted.

LONDON.—For alterations to the sanitary arrangements at the Rentiew-road Workhouse, S.E., for the Lambeth Guardians, under the superintendence of Mr. G. Crowder, Clerk of Works:—

Rice & Son..... ..£887	0	0	Foreman Bros. £724	10	6	
Wanser & Walker ..	830	0	0	Allen & Stanley.....	723	0 0
Doulton & Co.	827	0	0	J. Knight	714	16 11
Mills	818	10	0	E. Wall	712	11 1
G. Davis	800	0	0	Finch & Co.....	675	0 0
James	753	18	0	Turner	670	0 0
Vigor	747	0	0	F. W. Harris	649	0 0
Bowle & Petres.....	727	15	0	R. F. Seed*.....	630	0 0

* Accepted.

LUGWARDINE (Herefordshire).—For the erection of a villa residence at Lugwardine, for Mrs. Ayers. Mr. Ernest G. Davies, architect, 6, St. John-street, Hereford. Quantities by the architect:—

E. W. Wilkes.....£893		C. Cooke £770	
W. Rowberry.....	850	R. Taylor*	735
W. C. Taylor.....	812		

* Accepted.

MIDDLESBROUGH.—For additions to mineral water manufactory, Grange-street, for Mr. J. Buston. Mr. W. G. Roberts, architect, 61, Albert-road, Middlesbrough:—

Brickwork and Stonework.

J. Johnson £185	0	0	D. Doughty, Middlesbrough*.....£131 15 0
W. Pounder.	169	17	0
J. Coates	131	15	0

Joinery and Girders.

R. Sweeting	210	0	0 H. R. Carter, Middlesbrough* 181 0 0
R. Bell	105	12	0

Plumbing and Glazing.

Baker Bros., Middlesbrough*	23	0	0 Curtis & Bowman 22 13 0
			R. Ripley..... 19 17 2

Slating.

J. & R. Mascall, Middlesbrough* ..	57	15	0 J. Harrison 56 13 0
W. Tyreman	57	4	0 W. B. Robinson..... 55 0 0

Brick, Stone, Joinery, and Girders.

Allison Bros..... ..... £425

* Accepted.

NEW BUSHEY.—For additions to the New Bushey Board schools. Mr. W. H. Syme, architect, Watford:—

General Builders, Limited	£3,200	J. Darvill	£3,000
Andrews & Sons	3,150	W. Judge	2,971
W. B. Neal	3,120	T. Turner, Limited.....	2,956
F. Dupont.....	3,098	G. Wiggs	2,939
G. & J. Waterman.....	3,058	Coulson & Lofts	2,867
Webster & Cannon	3,055	H. B. Watkins.....	2,795
C. Brightman	3,027	C. Eames, Watford*.....	2,644

* Provisionally accepted.

NORTH SHIELDS.—For the execution of street works, Rosehill, for the Tynemouth Rural District Council. Mr. J. Waters, C.E., District Surveyor, Long Benton:—

J. Thompson £612	4	0	G. E. Simpson, 'New-castle (accepted) ..£499 3 6'
Johnson.....	533	13	5 G. Maughan 497 17 7

PITLOCHRY (N.B.).—For the eerction of a public hall. Messrs. J. Bruce & Son, architects, Dundee. Quantities by Mr. William Campbell, North Methven-street, Perth:—

Masonry.—Stewart, Jamieson & Forbes, Pitlochry	£1,374	12	8
Joinery.—Sim, Moulin	689	8	4
Plumbing.—A. Menzies, Pitlochry	186	0	0
Slating.—A. R. Butchart, Pitlochry	113	10	0
Plastering.—J. Veitch, Pitlochry	138	2	2
Glazing.—Chas. Alexander, Perth	15	14	0

RUGBY.—For paving, kerbing, &c., Pinfold-street, New Bilton, for the Rugby Rural District Council. Mr. T. W. Willard, Surveyor to the Council, Rugby. Quantities by the Surveyor:—
A. Jewell .....£614 | J. Holme, Leicester* £564
* Accepted.

RYDE (I.W.).—For the execution of road works, &c., Woodlands Vale Estate, for Lieut.-Gen. Hon. S. Gough-Calthorpe. Mr. J. T. Barton, C.E., 1, St. Thomas-street, Ryde:—

E. James £1,987		W. L. Meredith, Gloucester*	£1,738
S. Kavanagh	1,848		
J. Barton	1,788	W. Gosden†	1,215
S. Dredge.....	1,775		

* Accepted, † Withdrawn.

SLOUGH.—For alterations and additions to "The Wellington Arms," Slough, for Mr. John Canning, Mr. S. M. Wyborn, architect:—

H. D. Bowyer £485	0	Bampfylde £448	0
J. Atkins	470	0 Simmons	435 10
Reavell	449	0 John Deverill, Slough* ..	425 0

* Accepted.

SOUTHEND (Bucks.).—For additions to Southend Farm, for Mr. Maurice J. Swabey. Mr R. C. Gleed, architect:—

Botterell £375		John Deverill, Slough*.....£343	
H. D. Bowyer	345		

* Accepted.

THAMES DITTON.—For three pairs of villas at Thames Ditton. Mr. A. J. Harawick, architect:—

Shockwood £5,769		Tomkinson £5,500	
Kelsey	5,761	Maeers	5 300
Oldridge	5.739	Wells	5,300

LONDON SCHOOL BOARD TENDERS.

At the last meeting of the London School Board, the Works Committee submitted the following lists of tenders:—

ALBION-STREET.—Cleaning interior:—

Edwards & Medway	£504	0	0	C. S. Jones.....	£220	0 0
W. V. Goad.....	327	0	0	H. Line.....	216	0 0
E. Proctor	245	0	0	W. Banks	184	19 6
A. White & Co.	244	0	0	W. Brown*	140	0 0

ALTON-STREET.—Cleaning interior:—

Johnson & Co. £315		S. H. Corfield £148	0
A. E. Symes	250	J. T. Robey*	138 0
A. W. Derby	179		

ARTHUR-STREET.—Cleaning interior:—

Edwards & Medway....£299	0	H. Line £158	0
W. V. Goad	271	0 E. Flood	186 0
H. J. Williams.....	220	0 Jones & Groves*	143 16

CALEDONIAN-ROAD.—Cleaning interior:—

F. Britton £474	17	Stevens Bros.* £182	10
F. Chidley	183	0	

CALVERT-ROAD.—Cleaning interior:—

C. G. Jones £185	18	0 W. Hayter & Son....£150	0 0
S. Musgrove.....	185	7 0 C. Foreman	148 0 0
E. Proctor	185	0 0 W. Banks*	135 19 0
F. R. Blaxton	179	15 0	

CATHERINE-STREET.—Cleaning interior:—

Gardner & Hazell £326	0	W. Silk & Son.....£147	
McCormick & Sons	253	0 T. Cruwys	218
G. Wales.....	249	12 W. Bunce*	203

CHICKSAND-STREET.—Painting exterior and cleaning interior:—

Johnson & Co.....£728	0	0 G. Wales.. .....£424	11 0
F. & F. J. Wood	639	15 3 G. Barker.....	422 0 0
J. F. Holliday.....	594	10 0 J. Kybett	416 0 0
A. W. Derby	583	0 0 J. Haydon	302 0 0
W. V. Goad.....	493	0 0	

COLLINGWOOD-STREET.—Cleaning interior:—

F. & F. J. Wood £300		G. Barker £181	
A. W. Derby	245	J. F. Holliday.....	180
A. E. Symes	230	J. Kybett*	176

"CUBITT TOWN."—Cleaning interior:—

A. W. Derby £136	10	0 Jones & Groves £117	12 0
W. Hayter & Son....	135	0 0 J. T. Robey.....	113 0 0
W. Banks.....	125	19 6 J. Kybett*	110 0 0
W. Brown	119	16 0	

DALGLEISH-STREET.—Cleaning interior:—

Jones & Groves £218	7	G. Barker	£169 0
W. Hayter & Son	197	0 A. W. Derby	137 0
J. T. Robey.....	195	0 S. H. Corfield*.....	129 0
E. Jackson & Son	182	0	

GLAUCUS-STREET.—(Iron buildings) cleaning interior:—

J. T. Robey £63	14	J. Kybett	£44 0
G. Wales	48	7 A. W. Derby*.....	40 10

HALFORD-ROAD.—Painting exterior and cleaning interior:—

G. H. Sealey £830	0	W. Hornett £325	0 0
T. Gregory & Co.	458	18 F. G. Minter	324 10 0
W. R. & A. Hide.....	365	10 F. T. Chinchen	293 0 0
F. Chidley	363	10 W. Chappell.....	285 0 0
W. Whiteley	341	14 W. Hammond.....	282 14 0
C. Gurling	325	7 Bristow & Eatwell* ..	203 4 40

HAMOND-SQUARE.—Providing and fixing a hot-water coil, and fixing tubular boiler:—

H. C. Price Lea & Co.	£85 0	W. Simmons	£36 4
Stevens & Sons	47 10	G. & E. Bradley	33 5
J. Grundy	36 13	G. Davis*	33 0

HOLLYDALE-ROAD.—Painting exterior and cleaning interior:—

T. Freeman & Son	£536 0 0	C. S. Jones	£369 10 0
W. Akers & Co.	483 12 0	W. Banks.	354 19 6
H. J. Williams	418 0 0	J. & C. Bowyer	348 0 0
H. Line	406 0 0	G. Kemp*	330 0 0

JOHANNA-STREET.—Painting exterior and cleaning interior:—

T. Hooper & Son	£473 0	G. Brittain	£251 10
Edwards & Medway	410 0	J. F. Ford	233 10
Holliday & Greenwood	299 0	B. E. Nightingale	221 0
Lathey Bros.	277 0	W. Hornett*	170 18
H. & G. Mallett	258 0		

* Accepted.

LANGFORD-ROAD.—Painting exterior and cleaning interior:—

T. Gregory & Co.	£459 16 0	F. G. Minter	£351 0 0
W. R. & A. Hide	392 17 0	O. Craske	325 17 0
E. Flood	380 0 0	F. T. Chinchen	324 15 0
W. Whiteley	361 7 6	W. Hammond*	296 0 0
W. Hornett	356 0 0	Bristow & Eatwell	221 13 11

MONSON-ROAD.—Cleaning interior:—

W. Akers & Co.	£340 0	S. Musgrove	£287 15
C. S. Jones	331 10	Holliday & Greenwood	279 0
W. V. Goad	327 0	Jones & Groves	254 19
E. Proctor	310 0	H. J. Williams*	238 0

OBAN-STREET.—Cleaning interior:—

A. E. Symes	£310 0 0	G. Wales	£213 17 6
A. W. Derby	275 0 0	J. T. Robey	212 0 0
J. F. Holliday	231 10 0	S. H. Corfield*	187 0 0
J. Kybett	224 0 0		

* Accepted.

POPE-STREET.—Painting exterior and cleaning interior:—

C. Foreman	£277 0 0	G. Kemp	£190 0 0
T. Freeman & Son	258 5 0	W. Banks	183 12 6
C. S. Jones	230 10 0	W. Hornett*	174 6 0
J. Otway	198 17 0		

POPHAM-ROAD.—Cleaning interior:—

Gardner & Hazell	£230	W. Bunce	£194
J. Grover & Son	218	W. Silk & Son	175
McCormick & Son	212		

POWIS-STREET.—Providing and fixing hot-water coils in two class-rooms each boys' and girls' departments, and fixing four new S.B. stoves and two tubular boilers:—

J. C. & J. S. Ellis, Ltd.	£122 10	Berry, Campbell, & Co.	£98 10
Stevens & Sons	122 0	Sharp, O'Brien, & Co.*	82 0

RAYWOOD-STREET.—Cleaning interior:—

E. P. Bulled & Co.	£275 0	W. Chappell	£160 0
W. Johnson & Co., Ltd.	250 10	C. Gurling	151 10
Holloway Bros.	217 0	J. Garrett & Son*	122 0
Lathey Bros.	199 0		

RICHARD-STREET.—Cleaning interior:—

J. Grover & Son	£238 0	Gardner & Hazell	£205 0
W. Silk & Son	225 0	C. & W. Hunnings	183 15
McCormick & Sons	214 0	Marchant & Hirst*	118 15

ST. PAUL'S-ROAD.—Providing auxiliary heating in all departments:—

Strode & Co.	£398	A. Dougill & Co., Ltd.*	£277
E. Oldroyd & Co., Ltd.	284		

SUPPLY of Linoleum (including laying) at per sq. yd.:—

E. Catesby & Sons	2s. 7d.	J. Shoolbred & Co.*	2s. 4d.
Treloar & Sons	2s. 6d.		

* Recommended for acceptance.

TEESDALE-STREET.—Painting exterior and cleaning interior:—

Johnson & Co.	£500 0	G. Barker	£309 0
F. & F. J. Wood	481 5	J. Kybett	293 0
Snewin Bros. & Co.	359 0	G. Wales	291 8
W. Shurmur	350 0	J. Haydon*	266 0
S. H. Corfield	312 0		

TOOTING GRAVENEY.—Cleaning interior:—

Maxwell Bros., Ltd.	£341 0	E. Flood	£260 0
R. S. Ronald	326 13	Rice & Son	254 0
W. Johnson & Co., Ltd.	315 10	J. Garrett & Son*	190 0

TRINITY-PLACE.—Cleaning interior:—

T. Cruwys	£113 15	Marchant & Hirst	£78 15
Snewin Bros. & Co.	89 0	G. Wales*	75 0

UPPER NORTH STREET (Infants').—Providing and fixing sliding glazed partition and altering widths of stepped flooring, &c (Second competition):—

G. Barker	£177	J. Kybett	£139
A. E. Symes	156	Unsigned	125
Johnson & Co.	150	S. H. Corfield*	114

UPTON HOUSE.—Providing and fixing an apparatus for the supply of tepid water to baths:—

J. C. & J. S. Ellis, Ltd.	£133 0	J. & F. May*	£78 0
J. Wontner-Smith, Gray & Co.	85 15		

TO CORRESPONDENTS.

J. F. T.—J. J. and M.—R. and W. (Amounts should have been stated.) "A Clerk of Works" (Next week).

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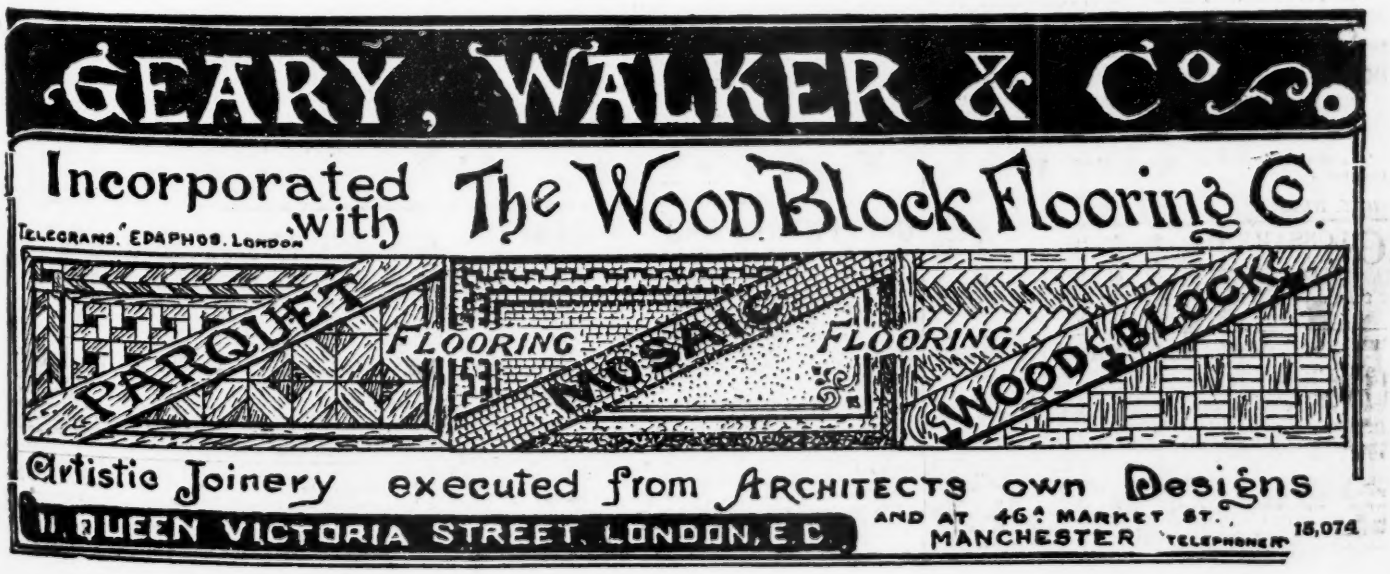
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7. Tewkesbury .. .. .. DEC.

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8. Fountains .. .. .. JAN.
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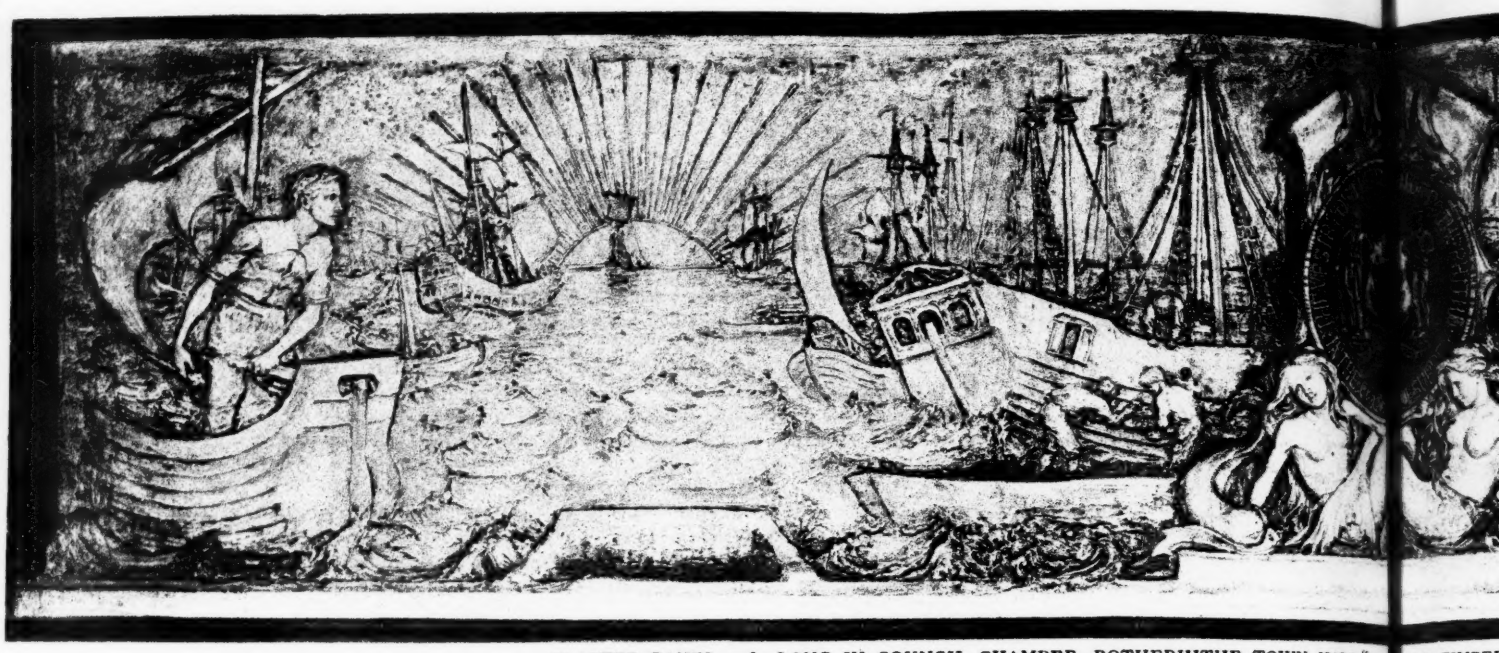

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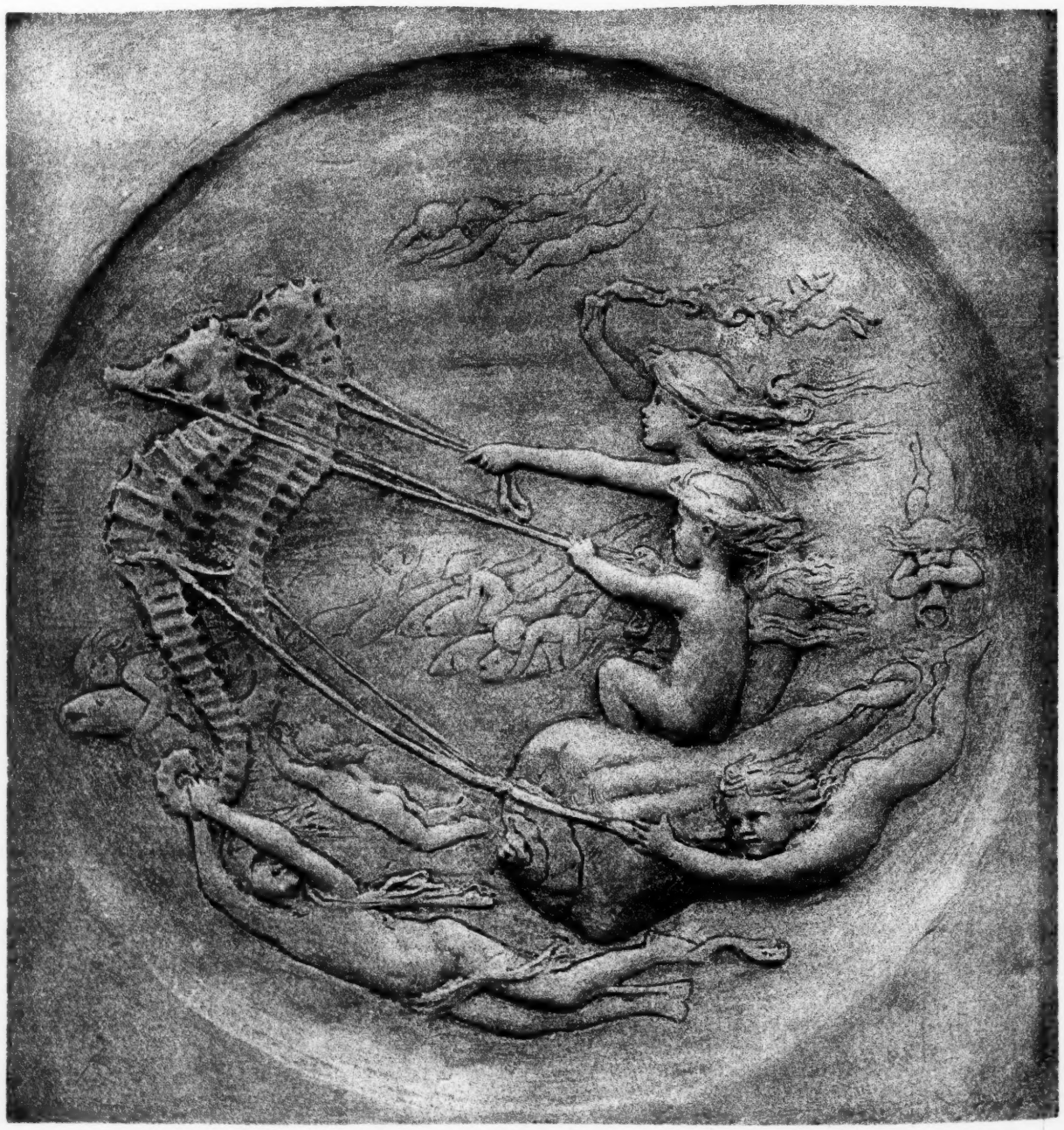

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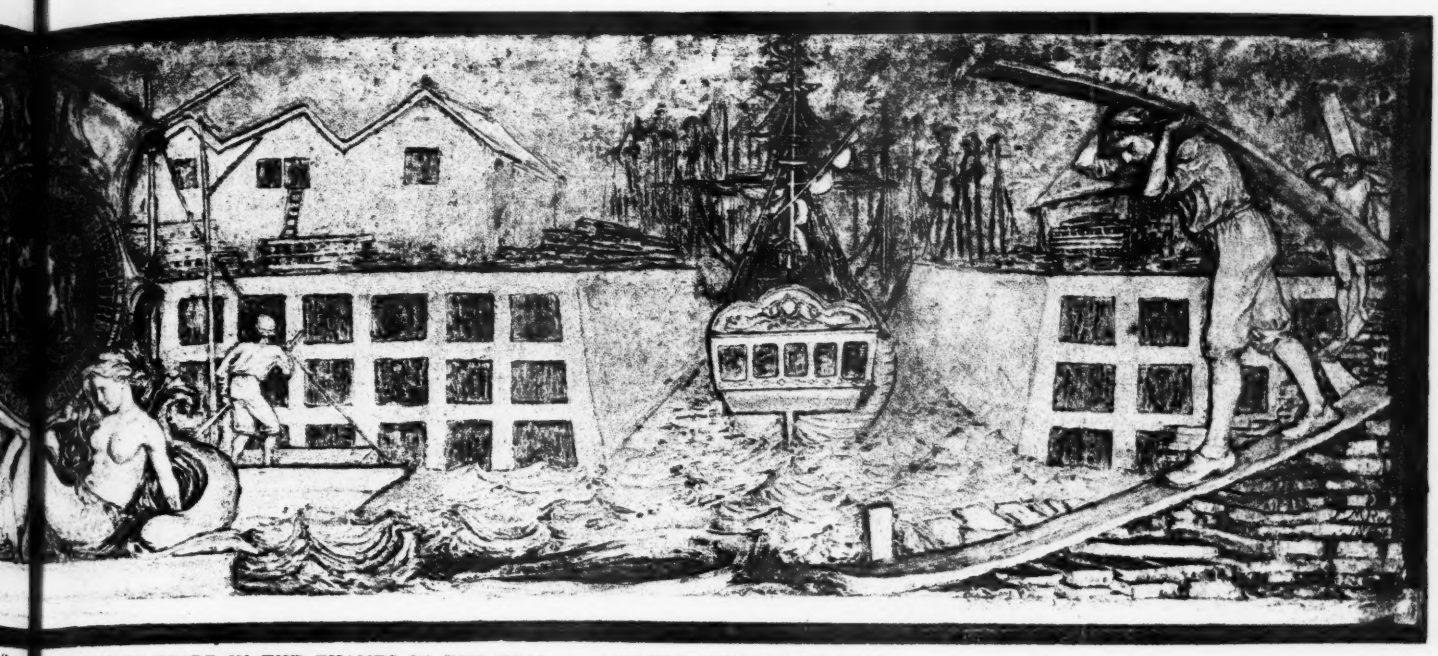

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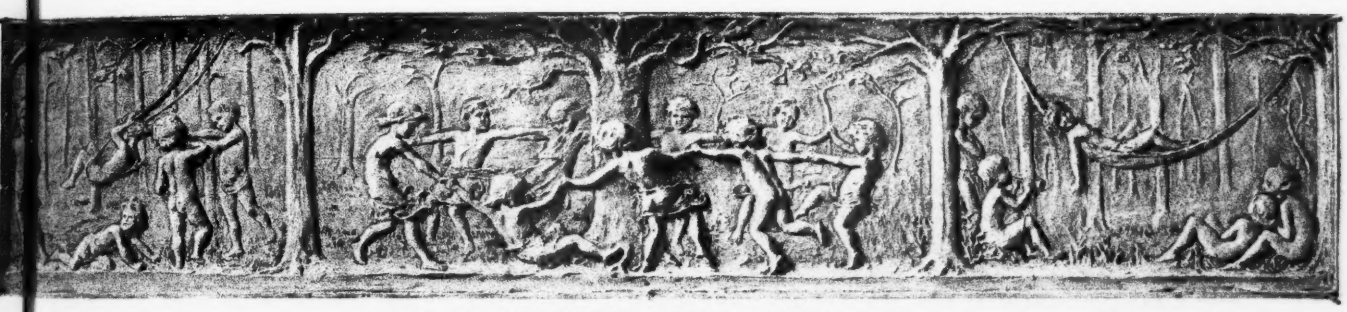

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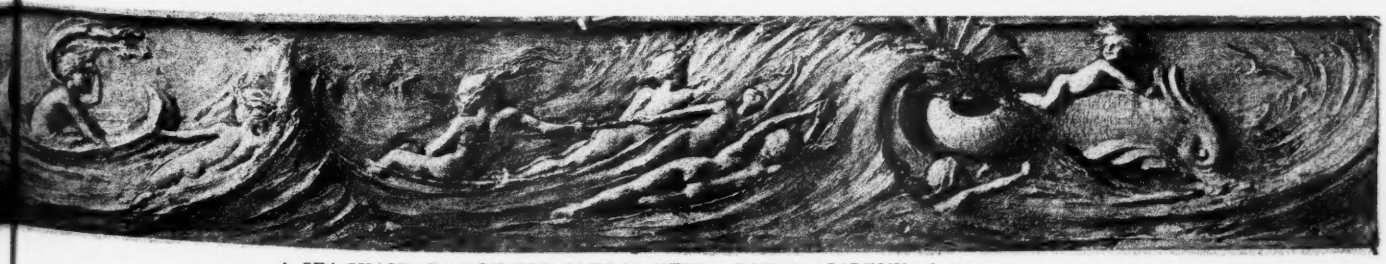

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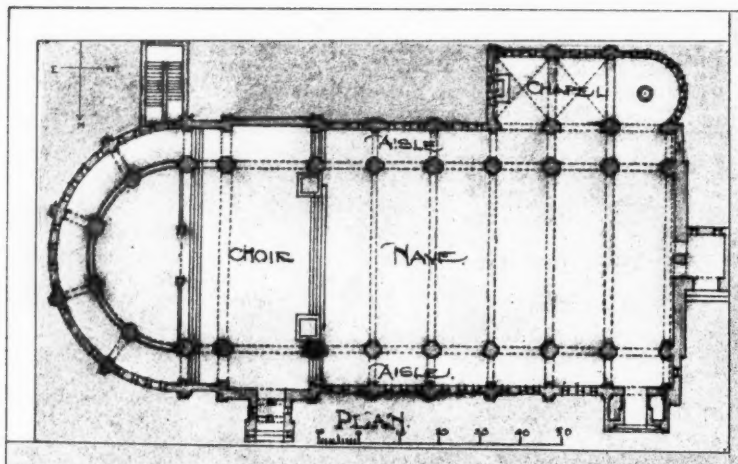

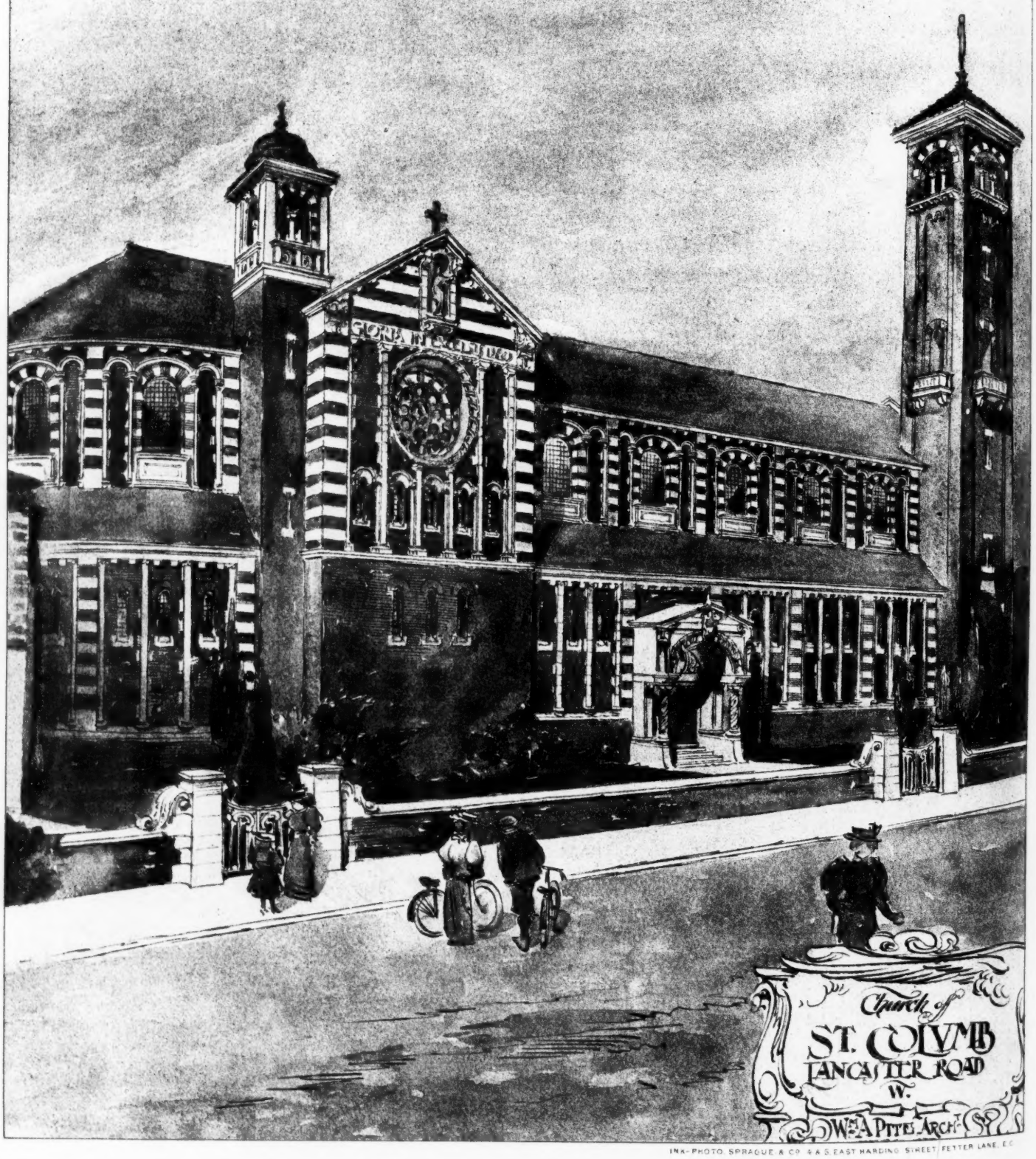

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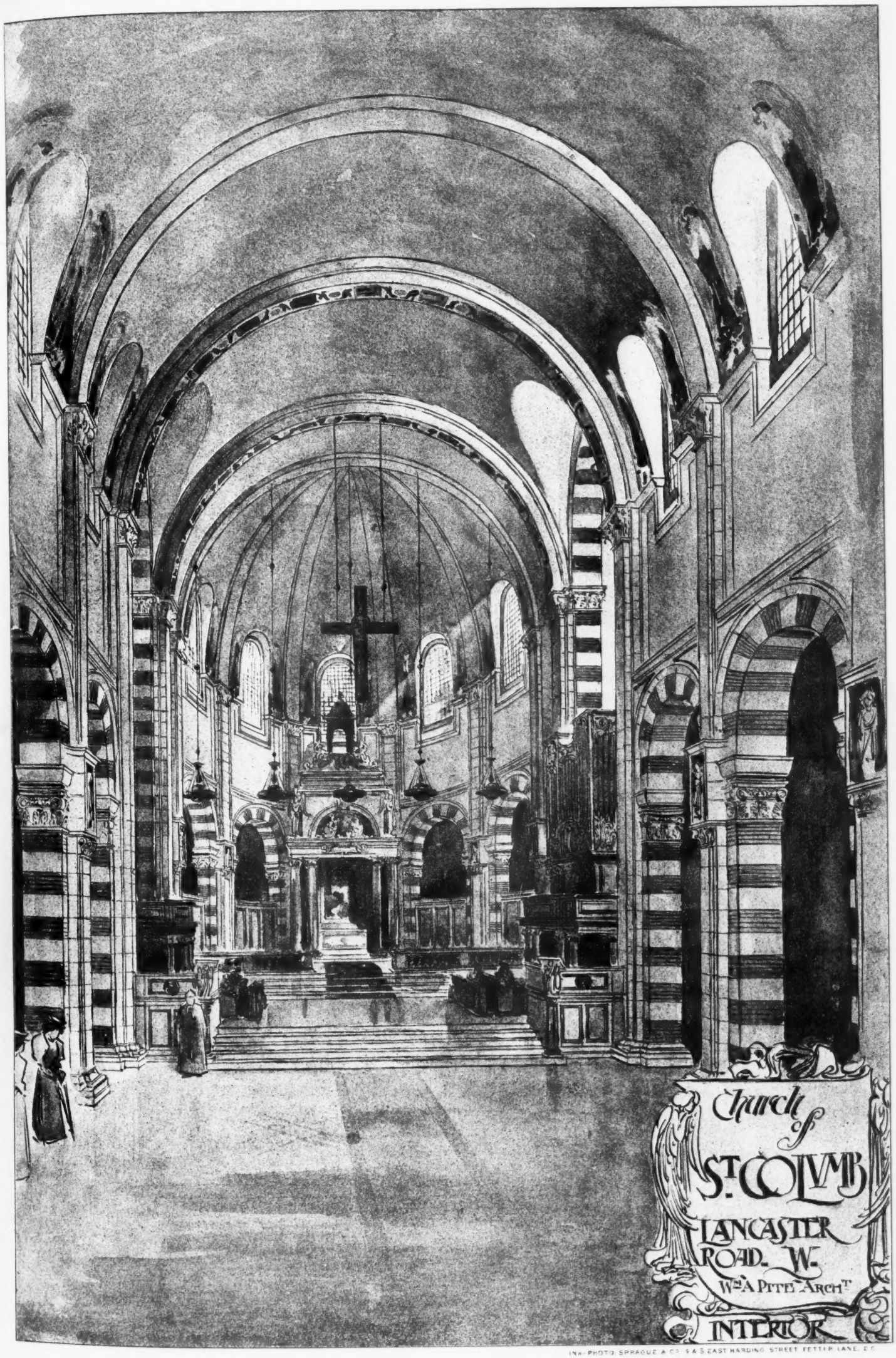

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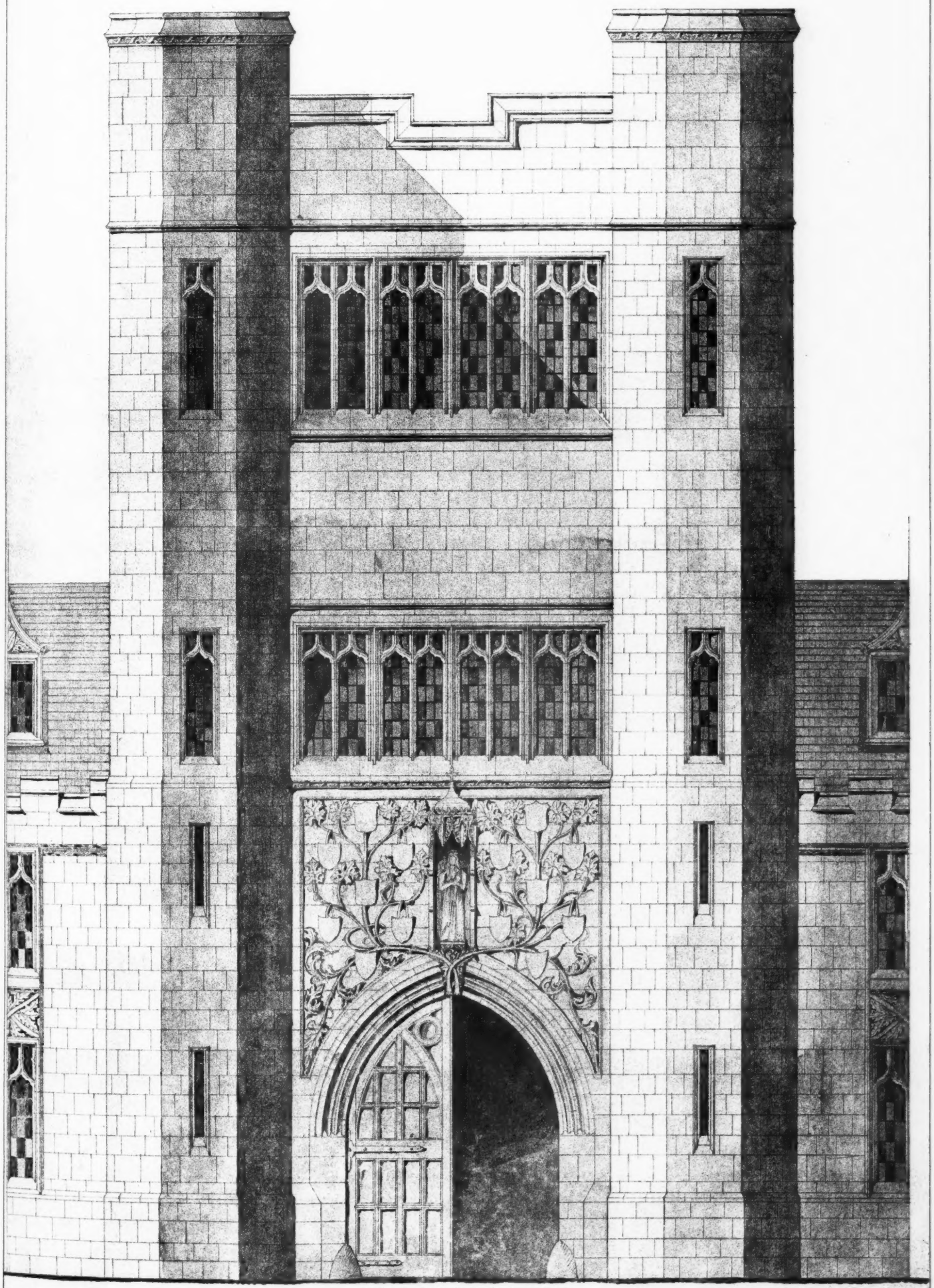

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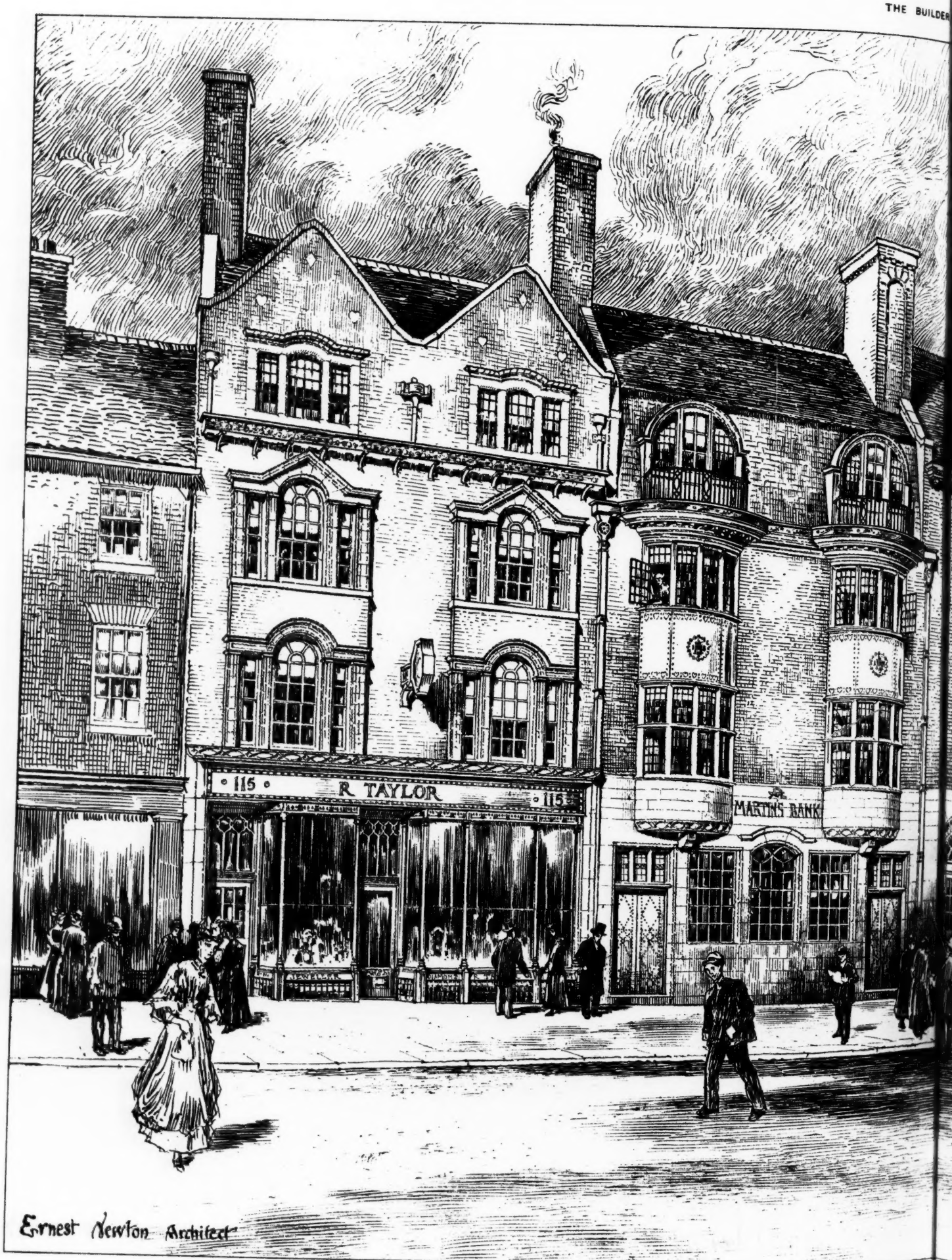

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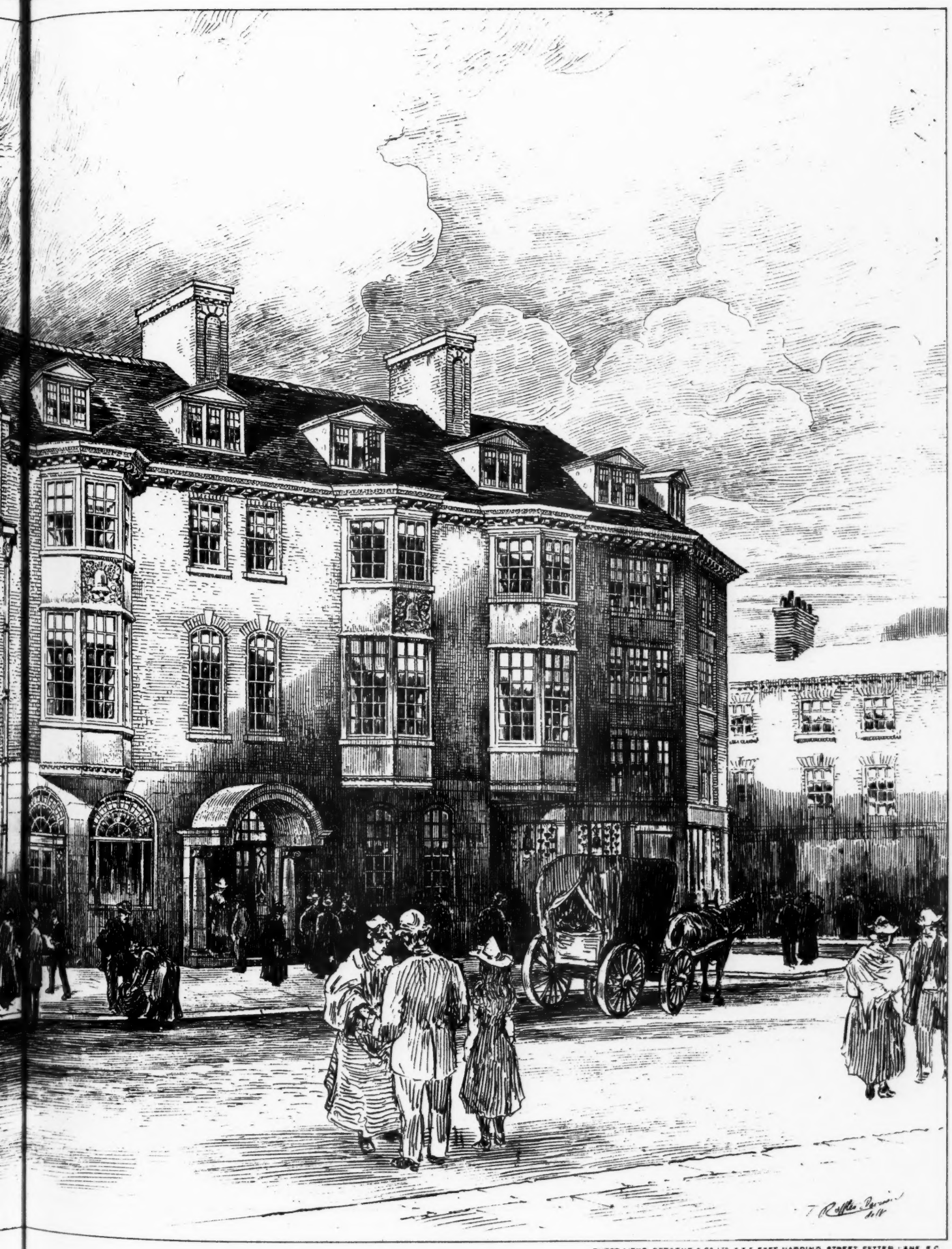

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